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DIABETIC COMA

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Despite the fact that diabetic acidosis is usually controllable, and coma, in the majority of cases, can be prevented, yet coma does occur not rarely. Until the last few years, we recognized two usual causes for the severe acidosis that produces coma; these were infections and lapses in diet. Now we must add a third cause—failure to use an accustomed amount of insulin. There are now probably hundreds of diabetic patients to whom insulin is as necessary as the air we breathe. If, for some human reason, the daily dose is omitted without at the same time adjusting the diet, or if supplies of insulin fail, the result is disastrous. That the diabetic patient is prone to lapses in the strict routine of his irksome diet is not only human; it is even biologic. All of us abhor monotony, and when the daily duties extend even to meticulous measurement and calculation of every meal, it is no wonder that a few rebel. Nor may one justly withhold admiration for the simple bravery that has held a man in spite of his affirmation that hunger is his constant companion.

The usual factor, however, that initiates serious acidosis is infection. With a diabetic child, even a trivial cold may portend disaster. During last year I saw four cases of coma complicating otitis media, and in all the trouble had begun with colds. Any of the common infections carry the same menace; measles, tonsillitis and bronchitis are the usual ones. But since it is possible to carry diabetic patients through long and severe infections, such as pneumonia and typhoid, without dangerous acidosis, the first requisite is to recognize the possible danger and take necessary precautions. Every person with severe diabetes must be kept under surveillance; and he and his family must be trained in the measures to be taken if he becomes suddenly sick—to go to bed, to keep warm, to drink ample amounts of fluid and to notify his physician.

In the methods of treating diabetic coma, we have been too much obsessed by the fact that the reaction of the blood verged toward acidity and have thus failed to recognize the consequences of the purely toxic effects of the ketone acids. With the appearance of a ferric chlorid reaction in the urine, it has been traditional to give soda, and if the reaction grew more intense to give more soda; should coma impend, the soda was given intravenously. Now I have serious doubts whether alkalis *alone* ever prevented coma or saved a patient who had developed coma. One of the many services that Joslin has rendered is to question the efficacy of soda in acidosis. Whether he has gone to an extreme matters not at all. The point is that if one relies on soda alone, the patient is doomed. Many of us proved this much to our satisfaction long ago. In the opinion of many, the use of alkalis has its definite but narrow and exceptional indications. For the average case it may be dispensed with; the urgent need is in other directions.

Until insulin was available, it was impossible to study the various abnormal factors whose fusion produces the clinical picture of diabetic coma as we see it. In an earlier paper[1] this was attempted, and matured experience has shown that, from a practical point of view at least, some results of acid intoxication require equal attention with the acidosis. This fact was impressed on me by death resulting after acidosis had vanished.

The most important consequence of acid intoxication is dehydration. This results not from acidosis per se, but from the dulled sensorium and stupor which acidosis produces. Acidosis develops as a consequence of failure of the tissues to oxidize glucose in sufficient amounts. This is manifested clinically by increased severity of the glycosuria. Now as the acidosis becomes more critical, the patient at first experiences nausea and abdominal pain, possibly vomiting. Later, he is somnolent. As a result of these conditions he drinks less and less; first, because of the nausea; later, because he is too drowsy to note his thirst. But during these hours, there has been no abating of the intensity of the glycosuria. On the contrary, the percentage of sugar in the urine may be rising, and water is being abstracted from the tissues in increasing amounts to produce urine. At the same time there is an increased water loss from the lungs due to increased pulmonary ventilation (air hunger). The net result of these factors is a dehydration of the tissues, which is notable in the dry, parched tongue and pharynx; sunken, soft eyeball, and loose skin: a picture similar to that produced by intestinal infections in children or by cholera. Some idea of the severity of this dehydration may be had from the red blood cell count during coma, compared with that taken the following day.

In this state of affairs, therapeutic indications are definite; water must be restored to the tissues by the methods that will give promptest relief. These are by hypodermoclysis, by intraperitoneal infusion, and, possibly, by intravenous injection. The latter method, however, is not free of danger, since in these cases the heart is always a doubtful factor. Two years ago we were in the habit of depending on the absorption of water given by rectum; but because this absorption is too slow and at best uncertain, the method has been abandoned in treating coma. The rapidity with which

1. Foster, N. B.: Treatment of Diabetic Coma with Insulin, Proc. A. Am. Phys. 59: 382, 1923.

absorption occurs in these dehydrated patients when physiologic sodium chlorid solution is injected into the tissues is sometimes amazing. The tissue seems to "drink it up," and it is a matter of no difficulty to give a liter in an hour. There is also rapid absorption from the peritoneal cavity, and in desperate cases this avenue should not be neglected. A liter of fluid may be injected, slowly, under low gravity, with no danger of distention. The peculiar advantage of these methods is that they throw no sudden tax on the heart. It has happened twice that patients have died suddenly while I was giving saline solution into a vein. Similar unfortunate experiences have been recorded by others, and we are familiar with the degeneration these hearts display post mortem. On that account, while I still give saline solution intravenously in many cases of diabetic coma, I do so only after consideration, and then with every care to make the injection very slowly.

These considerations relative to dehydration I have mentioned first, because I do not think they can be cases this may be all that is required; but when coma has already supervened and the body contains considerable amounts of ketone bodies, more heroic measures are required to preserve life. When there is severe acidosis, the patient takes little food, and as stupor advances none at all; energy for heat and organic functions is derived from the catabolism of body tissue, protein and fat. Of the amino-acids into which protein is first split, 58 per cent. is transformed into glucose, which because of the severe diabetic state is not utilized at all or at best only to a small degree, but is lost in the urine. Consequently, the body subsists largely on a fat metabolism, and the fat is oxidized only to the ketone acids, owing to the defect in glucose metabolism.

In order to prevent further ketone formation, then, it becomes necessary to insure the utilization of enough glucose to balance the amount of fat burned. When acidosis is not profound, before coma is present the glucose in the blood appears to be sufficient; but at later stages of the intoxication this seems not to be

TABLE 1.—*Findings in Twenty Cases of Coma*

Patient	Exciting Cause of Coma	Degree of Coma	Blood: Sugar, Mg.	Blood: Carbon Dioxid, per Cent.	Insulin Units Used in First 12 Hours	Result
16	Respiratory infection..	Complete	750	9.0	200	Discharged; diet: C. 60, P. 85, F. 160; 15 units of insulin daily
17	Unknown.....	Complete	?	?	120	Died on sixth day of cardiac failure
18	Dietary indiscretion...	Slight	471	22	120	Recovered, readmitted a year later; Case 28
19	Respiratory infection..	Can be roused	638	10	180	Anuria and uremia developed after a week; patient died; no evidence of acidosis
20	Unknown.....	Moderate	470	21	200	Discharged; two months later insulin not required
21	Otitis media.....	Complete	?	?	200	Discharged; diet: C. 70, P. 60, F. 140; 25 units of insulin daily
22	Dietary indiscretion...	Moderate	320	13	120	Discharged; diet: C. 60, P. 80, F. 160; 25 units of insulin daily
23	Dietary indiscretion...	Complete	720	?	200	Discharged; diet: C. 65, P. 75, F. 160; 20 units of insulin twice a day
24	Sinusitis.....	Moderate	570	..	120	Discharged; diet: C. 70, P. 60, F. 170; 15 units of insulin daily
25	Otitis.....	Complete (moribund)	...	..	60	Died within an hour after admission
26	Vulvar abscess.....	Complete	...	..	120	Out of coma in 5 hours; discharged; diet: C. 80, P. 85, F. 125; insulin, 10 units twice a day
27	Infected hand.....	Moderate	570	?	120	Arm amputated; recovered; discharged; diet: C. 70, P. 60, F. 120
28	Dietary indiscretion...	Complete	830	3	160	Discharged against advice on sixth day
29	Not known.....	Complete	640	11	200	Recovered; to physician for diet adjustment
30	Gastritis (?).....	Moderate	800	17	110	Discharged; diet: C. 70, P. 70, F. 160; 40 units of insulin each day
31	Dietary indiscretion...	Complete	...	..	210	Recovered; severe case; diet: C. 60, P. 85, F. 110; 40 units of insulin each day
32	Otitis media.....	Moderate	677	14	140	Recovered; diabetic child
33	Otitis media.....	Complete	1,200	9	200	Recovered; diet: C. 60, P. 60, F. 160; insulin, 70 units, daily; diabetic child
34	Abortion.....	Moderate	400	16	220	Recovered; diet: C. 75, P. 70, F. 180; insulin, 80 units, daily
35	Dietary indiscretion...	Complete	760	12	270	Recovered; diet: C. 80, P. 70, F. 160; 35 units of insulin daily

Twenty cases, three deaths; mortality, 6.6 per cent.
In the first series were fifteen cases and seven deaths, 46 per cent.

neglected even with effective insulin therapy. Several cases have come to a fatal termination after acidosis had practically disappeared, and it has seemed to me that the issue might have been different had we given due attention to dehydration. Moreover, when, without insulin, it has been possible to save a case, it has seemed to me that, either by intent or unwittingly, the principle I have discussed was utilized.

No one would now neglect insulin in treating severe acidosis. The immediate cause of acidosis is that the amount of carbohydrate oxidized is inadequate to effect the complete oxidation of fat. As a result, fats burn only to the ketone stage through which all fatty acids pass in the process of oxidation to carbon dioxid and water. This is a somewhat clearer statement of the familiar "fats burn only in the fire of carbohydrate." It is well known that a fairly definite relation between the amount of fat burned and the amount of carbohydrate burned must be preserved, and if the fat exceeds this ratio, ketones result. In the diabetic patient, the glucose is not burned, though present in the tissues, and the only way to insure the oxidation of large amounts of glucose is to use insulin. In milder the case, and glucose must be supplied along with insulin. I have tried to estimate the available glucose in the blood in some cases, but the blood volume is in question. On the basis that blood is 10 per cent. of the body weight, the total glucose in the blood varies in different cases from 30 to 75 gm. More is constantly formed, and the excretion through the kidneys is also continuous. This is insufficient glucose, even if entirely utilized, to correct the disorder in fat oxidation. Therefore it becomes advisable to inject glucose solution, which is easily done into a vein. It has also the added advantage that, if done at intervals, very large doses of insulin may be used without fear of "insulin shock." When the severity of the case requires it, 20 gm. of sugar may be injected as a 50 per cent. solution every two hours until the patient is able to drink orange juice.

DOSAGE OF INSULIN

There is no reliable guide for the early dosage. Formerly I used smaller doses than I now do, and if one takes precaution against hypoglycemia, the large doses offer the only chance in desperate cases. Estimating insulin dosage on the basis of the total glucose

in the blood, the initial dose should be somewhere between 30 and 75 units. We have not given less than 40 units, and on one occasion gave 150 units as the first dose. In the latter case, the blood was fortified by intravenous sugar solution hourly for six hours, and during this time 430 units of insulin was used.

After the first dose of insulin, the patient should be catheterized every two hours and the urine tested for sugar. If there is much sugar, it is safe and wise to use more insulin; the dose must be judged by the progress of the case. Naturally, when glycosuria ceases, insulin should be discontinued. I have never seen glycosuria disappear before the patient had recovered consciousness, but it has often happened that consciousness returned in about six hours and the urine was free from sugar in twelve. On the other hand, when large amounts of orange juice are given by mouth as soon as the patient is able to swallow, the glycosuria may persist and ketonuria be first to vanish. Frequent urine tests during the period of treatment of cases in coma are absolutely indispensable. There is no other guide for the use of insulin in these cases. Too much time is required for estimations of sugar or alkali reserve of the blood, so that these figures are seldom available, even in the hospital, for practical use.

In my opinion, the wise method is to use liberal doses of insulin, giving part of the initial dose intravenously, and then insure the glucose content of the blood by frequent intravenous injections of dextrose. By this method, combined with the other measures already outlined, a favorable result has been sometimes secured when the case seemed to me utterly hopeless. If the perverted metabolism of fat is to be restored to normal, it can be achieved only by the oxidation of large amounts of glucose. Insulin alone will not serve; the sugar, to burn, must be available.

RESULTS OF BLOOD ANALYSES

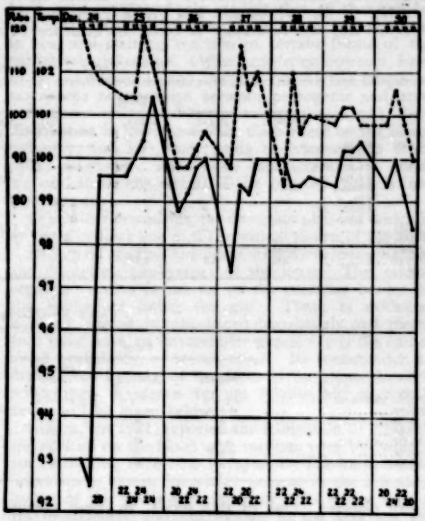
Mention may be made in passing of the results of blood analyses in this series of cases. In a majority of the cases, the glucose was found to be between 0.600 and 0.900 mg. per cubic centimeter. The highest figure was 1,260. It is of interest to me that I have one higher figure for blood sugar, but not in a case of diabetic coma. The carbon dioxid combining power, estimated by the Van Slyke method, ranged in coma cases from 17 down to 5 per cent. by volume. There is one case in which the figure was 3, but I doubt the accuracy of this estimation, since the condition of the patient seemed not so critical as in some others with more hopeful laboratory results. Both the patient with a carbon dioxid combining power of 5 and the patient with 3 recovered.

THE HEART

Excepting only the young, the heart should be regarded with suspicion in every case of severe acidosis. There is notable at necropsy in every case evidence of myocardial degeneration, and in relatively young adults, this may be pronounced and combined with a surprising degree of arteriosclerosis. Clinically, enfeebled heart action characterized every case of coma, and sudden death is not rare. Possibly the acid bodies induce some rapid change in the heart muscle. On account of distressing experiences, we now do what we can to support the heart during the critical period; formerly we used digitalis, but the effect of this drug is too slow for the exigency. Caffein is a doubtful staff, but at least it can do no harm and is rapid in effect. Ouabain, theoretically, is the proper drug, but we have not used it in a sufficient number of cases to justify judgment.

COMA

The various procedures to be executed in coma cases are exacting, and the need of promptness is so great that some sort of system has to be developed. The exigencies are quite the same as those surrounding emergency surgical operations, and these are best met, of course, in a hospital where everything is ready. As soon as the diagnosis is made, insulin is to be given, part of the dose intravenously. If the temperature is subnormal (as in the accompanying chart), hot water bottles are placed around the feet and in the axillae. As soon as possible, injections of saline solution are



Temperature in Case 19, showing subnormal temperature of unusual degree; temperature, solid line, solid dots; pulse, broken line, hollow dots; figures at bottom, respiration.

started by hypodermoclysis, and if the patient is severely desiccated and shocked, also intraperitoneally. If the patient had been vomiting before coma developed, the stomach is washed out with warm saline solution. The bowel is emptied by giving a high enema. Presumably the patient has been catheterized to secure a specimen for diagnosis, and at the end of two hours the bladder is again emptied and the urine tested for sugar and with ferric chlorid. This must be repeated at two hour intervals until consciousness returns. If after two hours there seems to have been no improvement in the patient's condition, the dose of insulin should be as large as the initial dose, but the patient should be protected by an intravenous injection of glucose. If matters are progressing favorably, a dose of from 20 to 25 units every two hours is continued till the urinary sugar begins to fall; then the insulin may be discontinued for a period.

The pulse is watched, and if it becomes weak or rapid, caffein or ouabain is given hypodermically. As soon as the patient is sufficiently conscious to be able to drink, he is given first hot broth or black coffee, 2 or 3 ounces (60 or 90 c.c.) at a time, every fifteen minutes. Hot liquids seem less likely to cause vomiting. After a couple of hours we use lemonade, sweetened with glycerin, and as much orange juice as the patient craves. During the first twenty-four hours, milk and orange juice are the only foods permitted, a liter of milk and the juice of from six to ten oranges, which amounts to about 100 gm. of carbohydrate and 1,000 calories. Ketonuria often disappears in a day, though it may last several; but the sugar usually disappears from the urine within twenty-four hours. It may reappear later after the insulin is temporarily discontinued.

After the patient has recovered from clinical acidosis, the further treatment proceeds as in any diabetic case: a matter of diet adjustment and probably the use of insulin. But not invariably is coma an evidence of severe diabetes. One of this series, an obese young man, was admitted to the hospital in deep coma, with every evidence of severe acidosis and a high blood sugar. Treatment was effectual, and sugar disappeared promptly from the urine. There was no return of glycosuria, and the blood sugar remained normal, although the diet was gradually increased to more than 3,000 calories. One wonders what the diet might have been which so shattered a tolerance nearly normal.

DIAGNOSIS

It is too often taken for granted that if coma befall a diabetic patient it is a case of diabetic coma, or if sugar is found in the urine, the fact is established that the cause of coma is diabetes. In the diagnosis of diabetic coma it is necessary to exclude other possible causes of stupor or unconsciousness quite as definitely as to prove diabetes. For example, fracture of the skull, especially of the base, is very often attended by glycosuria, and I have seen such cases with deep breathing quite suggestive of air hunger. Then many cases of diabetes develop hypertension and chronic nephritis, which logically terminate either in cerebral hemorrhage or uremia. The recognition of these several causes for coma is not difficult; the difficulty seems to be that when glycosuria is discovered other evidence is brushed aside or no further examination made. As positive evidence, ketonuria is equally important with glycosuria, and the absence of a ferric chlorid reaction would argue against diabetic acidosis.

METHOD OF TREATMENT

It will be helpful, possibly, to review briefly the method of treatment that was followed in two cases.

Patient 21 of this series, a woman, aged 42, stated that she had had diabetes about five years. Eight days before admission she "took cold," which developed into bilateral otitis media. She was admitted in deep coma, by which is meant that she could not be roused and that the reflexes were abolished. There were the usual signs of acidosis. Seventy units of insulin was given at once, and 50 units every two hours. Hypodermoclysis of a liter of saline solution was given, and after the bowel was cleaned, rectal instillations of glucose were given every three hours. The patient recovered consciousness in about twelve hours. As soon as she could swallow, liquids were given, especially orange juice and milk. The laboratory data are shown in Table 2.

Patient 23 had had diabetes about two years, and coma seemed to be due to indiscretions in diet. At the time of admission the stupor was not profound, but probably because treatment was not carried out with sufficient rigor the patient lapsed into deep coma. The dose of insulin was 40 units every two hours in the beginning. Rectal instillations of 5 per cent. glucose were not effective, and 3 liters of saline solution was then given by hypodermoclysis. On account of the character of the heart's action, stimulants were given. The patient recovered from coma within forty-eight hours, but later developed anuria, which gave anxiety (note Case 19). After this complication was passed, convalescence was uneventful.

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TABLE 2.—*Observations in Case 21*

		Urine					Blood: Glucose	Diet			Insulin
		Volume, C.c.	Sugar, per Cent.	Sugar, Gm.	Acetone	Diacetic Acid		Carbohydrate	Protein	Fat	
4/ 4/24	8 p.m.	.....	++++	..	++++	++++	.....	Glucose intravenously			70 units at once
	10 p.m.	.....	++++	..	++++	++++	.....	.....			400 units in 24 hours
4/ 5/24	12 a.m.	.....	++++	..	++++	++++	0.104	.....			30 units every 4 hours
	2 a.m.	.....	++++	..	++++	++++	.....	.....			
	8 a.m.	.....	++++	..	++++	+	.....	Milk			
	12 m.	.....	+++	..	+	0	.....	Oranges			
	4 p.m.	.....	++	..	0	0	.....	.....			
	11 p.m.	.....	0	..	0	0	.....	.....			
4/ 6/24	.....	.....	++	..	+	0	.....	.....			110 units
4/ 7/24	.....	.....	+++	..	++	+	.....	70	60	140	80 units (30 after eating)
4/ 9/24	.....	1,400	1	14	+	0	.....	70	60	140	60 units
4/11/24	.....	700	0.5	2.1	+	0	.....	70	60	140	105 units

TABLE 3.—*Observations in Case 23*

	Urine			Blood		Diet			
	Sugar	Acetone	Diacetic Acid	Glucose	Carbon Dioxid	Carbohydrate	Protein	Fat	Insulin
8/14/24, 10:30 a.m.	++++	++++	++++	730	7	..	..	..	40 on admission
8/15/24	+++	+++	+++	...	...	..	..	..	40 every 2 hours
8/16/24	0	0	+	150	32	Milk, orange juice			120 units; 30 units every 4 hours
8/17/24	+++	0	0	288	...				30 units every 4 hours
8/21/24	++	0	0	288	38	60	80	70	100 units
8/22/24	+++	+	0	345	44	60	80	70	100 units
8/25/24	0	0	0	...	..	60	80	70	110 units

Typhoid Incidence in 1923.—Seventy-seven cities reported 5,734 cases of typhoid fever for 1923, which is 19 per cent. less than the estimated expectancy. The case rate (0.19 per thousand) and the death rate (0.03 per thousand) were the same as for seventy-three cities in 1922.—*Pub. Health Rep.* 39:1668 (July 11) 1924.

THE RICKETTSIAE AND THEIR RELATIONSHIP TO DISEASE*

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"Rickettsia" is the name given by da Rocha-Lima in 1916 to minute micro-organisms, with certain peculiarities, found in lice. The name, which now covers a large group of micro-organisms in insects, honors the memory of Howard Taylor Ricketts, who first described micro-organisms of this type in studies on Rocky Mountain spotted fever and typhus fever. It is impossible to formulate a wholly satisfactory definition or characterization of the micro-organisms described as rickettsiae. Already the list is a large one and is composed of three pathogenic and thirty-nine nonpathogenic micro-organisms found in diverse species of insects.[1] It is not probable that all these micro-organisms are closely enough related to be included under a common name with generic or even group significance. It is very doubtful even if the three pathogenic members of this list are closely enough related to one another to warrant a common generic title. I refer now to the micro-organisms associated with typhus, Rocky Mountain spotted fever and trench fever. These were the first of the so-called rickettsiae to be discovered and have the following characteristics in common: transmission by insects, small size, gram-negative staining reaction, and as compared with bacteria, a slight affinity for dyestuffs. These three so-called rickettsiae are responsible for the interest centered in the prevalence of nonpathogenic morphologically similar organisms in insects.

Because of the transmission by insects of these pathogens, many non-blood-sucking, as well as blood-sucking insects, not suspected of carrying disease, have been examined (Sikora,[2] Cowdry,[3] Hertig and Wolbach [4] and others), and the list of micro-organisms described as rickettsiae or rickettsia-like has grown. As has already been shown,[4] the extremes of this list include micro-organisms apparently widely separated, yet they may be arranged in a series with but slight differences between adjacent members, one extreme, the extracellular "rickettsiae," closely resembling ordinary bacteria, the other extreme approaching in characteristics the large symbiotic micro-organisms, not cultivable and probably indispensable to the insects harboring them. *Rickettsia prowazeki*, the type form of rickettsia, and the cause of typhus, would lie intermediate in this series.

My endeavor in this paper will be, first, to give a superficial account of representative nonpathogenic forms and their possible relationships to intracellular symbionts of insects, and, secondly, to describe the pathogenic representatives and to present proof that they are the causes of the diseases with which they are associated.

Incidentally, I wish to emphasize and to insist on the importance of methods which may be employed in the face of failure to cultivate insect-borne micro-organisms in artificial mediums. Properly conducted experiments in which the insect vector serves as culture tube, after natural or artificial introduction of the "virus," have yielded evidence fully as reliable and in my opinion less open to misconstruction than in vitro cultivation. I feel it to be a duty to challenge skepticism based on rigid adherence to Koch's postulates when dealing with insect-borne diseases.

NONPATHOGENIC RICKETTSIAE

At the present time, all very small gram-negative bacterium-like micro-organisms found in insects are called rickettsiae. The hosts of the thirty-nine nonpathogenic "rickettsiae" include fourteen species of arachnids, ticks, mites and spiders, and twenty-two species of hexapods (insecta) distributed in nine orders, including numerous non-blood-sucking insects, as well as lice, ticks and midges. Most of these "rickettsiae" have not been carefully studied. A very few have resemblances to *Rickettsia prowazeki*. The majority have been so imperfectly studied that all that can be said about them is that they are in insects and conform in size and staining reaction to certain forms of the pathogenic rickettsiae. Other properties, however, have to be considered in the working out of the tangle of taxonomic relationships between pathogenic and nonpathogenic rickettsia-like micro-organisms; (1) their distribution in the insect; (2) their effect on the insect economy, and (3) their mode of transmission from insect to insect. With these considerations in mind, we can divide the rickettsia-like micro-organisms into three groups:

(*a*) Micro-organisms, the dominant phase of which is an extra-cellular one in the intestinal lumen of the host.

Rickettsia pediculi (identical with *Rickettsia quintana* and *Rickettsia wolhynica*) of the louse. This micro-organism occurs in masses on the cuticular border of the epithelium lining the gut. There is evidence, however, that it is transmitted hereditarily and therefore must have an intracellular phase. It is the cause, in all probability, of trench fever. Its transmission to man occurs by way of the feces of the louse, through scratching. Evidence for its relationship to trench fever will be given below.

Sikora,[5] in 1921, reported the cultivation of *Rickettsia pediculi* on the blood agar medium used by Nöller [6] for cultivating *Rickettsia melophagi*. The latter micro-organism is almost invariably present in the intestinal lumen of the sheep ked, from all parts of the world. Its morphology and distribution in the host are the same as those of *Rickettsia pediculi*. It is nonpathogenic for sheep, man and laboratory animals, and may be cultivated without great difficulty on glucose blood agar.

Other extracellular rickettsiae, less well studied, but presumably having the same attachment to the cuticular border of the epithelium of the gut, are present in the dust louse and various mallophaga ("lice") from horses, goats, doves and fowls. These extracellular rickettsiae can probably all be cultivated on artificial culture mediums. They stain more readily than the intracellular rickettsiae, and under the dark field they are more refractive than the intracellular rickettsiae. On the whole, there is very little if any reason for regarding them as different from familiar bacteria. The main reason for retaining them in this group is their perfect adaptation to the insect hosts, including the mechanism of hereditary transmission.

* Read before the New York State Association of Public Health Laboratories, Albany, Nov. 5, 1924.

1. Insect is used in the popular sense, as including Arachnida and Insecta.

2. Sikora, H.: Beiträge zur Kenntnis der Rickettsien, Arch. f. Schiffs- u. Tropen-Hyg. **22**: 422, 1918; Beobachtungen an Rickettsien, ibid. **24**: 347, 1920; Neue Rickettsia bei Vögelläusen, ibid. **26**: 271, 1922.

3. Cowdry, E. V.: The Distribution of Rickettsia in the Tissues of Insects and Arachnids, J. Exper. Med. **37**: 431 (April) 1923.

4. Hertig, Marshall; and Wolbach, S. B.: Studies on Rickettsia-Like Micro-Organisms in Insects, J. M. Res. **44**: 329 (March) 1924.

5. Sikora, H.: Ueber die Züchtung der Rickettsia Pediculi, Arch. f. Schiffs- u. Tropen-Hyg. **25**: 123, 1921.

6. Nöller, W.: Blut- und Insektenfreien Züchtung auf Platten, Arch. f. Schiffs- u. Tropen-Hyg. **21**: 33, 1917.

(*b*) Intracellular micro-organisms, having a uniform morphology, coccoid and diplococcoid. Representatives of this group are to be found in the book louse, *Dorypteryx*, and in the sand fly, *Culicoides*. These are nonpathogenic rickettsiae, may be distributed in the cells of various organs, and seem to be invariably present in the ovaries, which accounts for their hereditary transmission. At present we have little knowledge of these morphologically simple intracellular rickettsiae. Although perfectly adapted to their hosts, they have not given rise to specialized cells to house them.

(*c*) Intracellular pleomorphic micro-organisms, exhibiting coccoid, rod and filamentous forms. This division includes the cause of typhus fever, *Rickettsia prowazeki*, and of Rocky Mountain spotted fever, *Dermacentroxenus rickettsi*, as well as the nonpathogenic *Rickettsia lectularia* of the bedbug, and an unnamed rickettsia in the mosquito *Culex pipiens*, recently described by Hertig and me. Although the representatives of this group have morphologic similarities, we find very striking differences in their distribution and effects in the insect. The cause of Rocky Mountain spotted fever, for instance, invades all the tissues of the tick and even the nuclei of cells. It is transmitted to man by way of the salivary glands, and possibly by excreta. It has no deleterious effect on the ticks.

The rickettsia of typhus in the louse is found exclusively intracellular in the intestinal epithelium. Although there is no inflammatory reaction to its presence in the insect, it may destroy its host by successive invasion of the cells of the intestinal epithelium, thereby finally suspending digestion and assimilation: Proof of its hereditary transmission in the louse is incomplete, although there is some affirmative evidence. It is transmitted to man probably solely by way of the excreta of the louse.

Rickettsia lectularia of the bedbug is nonpathogenic for man and laboratory animals. It is pleomorphic, and its range of forms from coccoid to filamentous resembles that of *Rickettsia prowazeki*. It, however, produces bizarre forms and motile filaments unlike any phases of *Rickettsia prowazeki*. Its effect on the bedbug is probably beneficial in that it is probably essential for the economy of the insect. It inhabits cells of the malpighian tubules, intestines, ovaries, and also an especially differentiated structure, an organoid mass of cells, situated near the ovaries in the female and testes in the male. Such organ-like cell structures, evolved for the purpose of harboring symbiotic micro-organisms in insects, have been named mycetomes by Buchner.[7]

The unnamed rickettsia of *Culex pipiens* is found in the ovaries and testes and in cells lying in proximity to these organs. Although these cells are not grouped in an organoid structure, they probably represent cells that have differentiated for the harboring of this micro-organism. These last two rickettsiae, those of the bedbug and mosquito, in that they are harbored by especially differentiated cells and are constantly present, are probably to be regarded as pure symbionts. There is so little popular knowledge regarding the symbiotic micro-organisms of insects that it is well to explain that many insects have intracellular symbionts, usually very large as compared with rickettsiae, which are apparently indispensable to the economy of the insect. There is evidently a very delicate equilibrium existing between these symbiotic micro-organisms and their arthropod hosts. In many instances, the symbionts occupy mycetomes which appear very early in the development of the embryo. During the last year, Dr. Schlesinger and I have secured almost conclusive evidence that the symbionts of lice, which occupy a structure (Magenscheibe of the Germans, silver spot of the English) susceptible to operative removal, are absolutely essential for the life of lice.

The foregoing sketch indicates the complexity of the study of these minute micro-organisms of insects, and makes it evident that we have no adequate criteria for classification; but it is reasonable to conclude that Group A should be regarded as bacteria, while it is equally evident that those representatives in Group C, occupying mycetomes, may be totally unrelated to the morphologically similar pathogenic forms. The importance of a knowledge of rickettsia-like micro-organisms in insects is very apparent in the contemplation of researches yet to be made on the etiology of insect-borne diseases of plants and animals. Individually, some of the nonpathogenic "rickettsiae" are interesting objects of study and afford opportunities for the important study of true symbiosis.

As to the term rickettsia, I repeat the opinion expressed by Hertig and myself that it is desirable to restrict it to "proved pathogenic micro-organisms having the following characteristics: small size, pleomorphism, slight affinity for anilin dyes, and intracellular habitat."

I propose now to review in some detail our information concerning the three pathogenic "rickettsiae," together with the evidence for their causal relationship with the diseases of trench fever, Rocky Mountain spotted fever, and typhus.

RICKETTSIAE OF TRENCH FEVER

The rickettsiae of trench fever (*Rickettsia pediculi, Rickettsia quintana, Rickettsia wolhynica*) are extracellular, and were discovered in 1916 by Töpfer[8] in lice taken from trench fever patients. In 1917, Munk and da Rocha-Lima[9] reported the finding of similar micro-organisms in presumably normal lice. Also in 1917, Nöller[9] discovered the rickettsia of the sheep ked. Brumpt,[10] in 1918, found rickettsiae in lice taken from soldiers, and was unable to produce a disease when these lice were fed on himself. Although he assumed that he was working with *Rickettsia prowazeki*, it seems very probable that he was working with *Rickettsia pediculi*. His negative results may be explained on the assumption that there is a nonpathogenic rickettsia in the louse, or that he was immune to trench fever. Strong,[11] in 1919, on the basis of the investigations of the Trench Fever Commission of the American Red Cross,[12] concluded that the disease was produced by a filtrable virus and not by a rickettsia. On the other hand, the English workers Arkwright, Bacot and Duncan[13] have offered very tenable objections to the conditions under which the

7. Buchner, P.: Tier und Pflanze in intracellularer Symbiose, Berlin, Gebrüder Borntraeger, 1921.

8. Töpfer, H.: Zur Aetiologie des "Febris Wolhynica," Berlin klin. Wchnschr. 53:323, 1916.

9. Munk, F., and da Rocha-Lima, H.: Klinik und Aetiologie des sogenannten "Wolhynischen Fiebers," Münch. med. Wchnschr. 64:1422, 1917.

10. Brumpt, E.: Au sujet d'un parasite (Rickettsia prowazeki) des poux de l'homme considéré à tort, comme l'agent causal du typhus exanthématique, Bull. Soc. de path. exot. 11:249, 1918.

11. Strong, R. P.: The Significance of Rickettsia in Relation to Disease, Tr. A. Am. Phys. 34:322, 1919.

12. Strong, R. P.: American Red Cross Medical Research Committee, Report of Commission on Trench Fever, Oxford University Press, 1918.

13. Arkwright, J. A.; Bacot, A., and Duncan, F. M.: The Association of Rickettsia with Trench Fever, J. Hyg. 18:176 (April) 1919.

commission's experiments were conducted. They established the facts that lice can be infected with trench fever virus over a long period even after the patient has become afebrile, and that the presence of the trench fever virus is always accompanied by the presence of rickettsiae. The most important evidence for the causal relationship of *Rickettsia pediculi* to trench fever occurred through an accident to the late Mr. Bacot, while a member of our commission of the League of Red Cross Societies to Poland to study typhus. In the course of our control work with lice, in Warsaw, we demonstrated the common occurrence of extracellular rickettsiae in lice collected in a public bath-house. These rickettsiae, studied carefully by all possible methods, smears and sections, were indistinguishable from *Rickettsia pediculi*. Mr. Bacot, who collected and worked with these lice between March 31 and April 5, developed, April 7, a sharp febrile attack, and subsequently underwent a course of illness corresponding objectively and subjectively with trench fever. An account of his illness was published by him.[14] Mr. Bacot, during this period, was feeding on his person a stock of lice brought from England, and which were known to be free from rickettsiae for a period of more than two years before our work. These lice were also studied by us just prior to Mr. Bacot's illness, and found to be free from rickettsiae. At the commencement of Mr. Bacot's attack, he discontinued feeding his lice for a period of two days, and then resumed feeding them. Eight days afterward, rickettsiae began to appear in the excreta of some of the lice, and shortly afterward they appeared in enormous numbers. A study of the lice by serial sections showed that they were always extracellular. About fifty of these lice were studied in sections by Mr. Bacot, after his return to England, and twenty-six were studied in serial sections by me. Of the latter, seventeen contained extracellular rickettsiae, and nine were negative. In none were intracellular rickettsiae found.

The most important of the observations that Mr. Bacot made was that he continued to infect with rickettsiae clean stock lice fed on his person as late as September, 1920, three months after the disappearance of all symptoms. The evidence that Mr. Bacot acquired his infection from the Warsaw lice is very strong, since after a visit to the bath-house in Warsaw, March 31, he recovered lice free on his person. The appearance of extracellular rickettsiae indistinguishable from *Rickettsia pediculi* in Mr. Bacot's stock lice admits of no other conclusion than that their source was in the only contact with such material; i. e., the bath-house lice. The long period over which Mr. Bacot continued to infect fresh lice with rickettsiae offers a very obvious explanation for the frequent occurrence of similar rickettsiae in lice from apparently healthy persons. In the present state of our knowledge, I think we may feel justified in assuming that every person subjected to louse infestation in the countries in which trench fever (Wolhynian fever) was prevalent during and after the war has been exposed to this disease, and in all probability has suffered from it. Therefore, feeding experiments on persons who have lived in a trench fever region must be discounted as not reliable.

The pathology of trench fever is unknown. A few observers have stated that they have seen rickettsiae in the blood of patients, but personal experiences lead me to discount this type of evidence. Were it possible to make a histologic study of the body in trench fever, discover the nature of the lesions, and determine the presence or absence of rickettsiae, it might furnish evidence for or against the compatibility of their being the cause.

14. Bacot, A.: Brit. M. J. 1: 156 (Jan. 29) 1921.

ROCKY MOUNTAIN SPOTTED FEVER

Dermacentroxenus rickettsi is the name I[15] proposed in 1919 for the micro-organism of Rocky Mountain spotted fever. The micro-organism undergoes in the tick changes in morphology; in sequence, (1) an intracellular bacillus-like form, without chromatoid granules, present only in the cytoplasm of the alimentary tract cells; (2) a relatively small, rod-shaped form with chromatoid granules, seen within the cells of many tissues, and within the nuclei of cells of many tissues, and (3) a relatively large lanceolate paired form, which persists in the tissues of ticks and notably in the salivary glands long after the other forms can be found. This lanceolate form is characterized by its chromatoid staining reaction. It is a form most easily demonstrated in animal tissues, and is the only form that I have succeeded in finding in the eggs of infected ticks. In human tissues and in animal tissues, monkeys, guinea-pigs and rabbits, the organisms are found in the lesions of the disease with comparative ease. The lesions are quite characteristic, and are found in the blood vessels, arteries, veins and capillaries; and I have characterized the disease as an acute specific infectious endangeitis. The lesions are at first essentially proliferative and consist of an accumulation of endothelial cells derived from the vascular endothelium. Necrosis and thrombosis follow. Perivascular accumulations of mononuclear cells of endothelial origin may occur. The blood vessels most heavily affected are those of the skin and genitalia.

The plan of experimentation that I adopted with Rocky Mountain spotted fever, after the discovery of the organisms in the tissues of infected ticks and in experimental animals, and in the face of failure to cultivate them, was devised to ascertain whether or not the virus of the disease was separable from the micro-organisms. The ticks used for all of the transmission experiments were first proved to be free from the virus of Rocky Mountain spotted fever, and in most of the experiments the ticks were raised in the laboratory from stock proved to be free from all micro-organisms. It was found that the partial feeding of a tick did not always make it infective. A tick that had failed to become infective after feeding on a guinea-pig with Rocky Mountain spotted fever did not acquire the micro-organism. On the other hand, ticks that did become infective had invariably acquired the micro-organism of the disease. The most conclusive experiments were those done with nymphs raised from eggs, all of which came from one female. It was possible thus to use large numbers of adequately controlled stock, and the conclusion was reached that without these micro-organisms ticks did not transmit Rocky Mountain spotted fever.

The micro-organisms, both in ticks and in mammalian tissues, are so distinctive in appearance that trained pathologists to whom I showed them did not consider any possibility other than their being micro-organisms. Many years of experience in the microscopic study of tissues gives a familiarity with the various types of intracellular granules, including those of wandering cells. Such possibilities I could imme-

15. Wolbach, S. B.: Studies on Rocky Mountain Spotted Fever, J. M. Res. 41: 197, 1919.

diately exclude. The question of mistaking mitochondria for micro-organisms was entertained for a brief period, but soon discarded because the structures did not appear in control material; and there is no reason to believe or possible explanation that mitochondria should stain in infected ticks and in pathologic mammalian tissues, when, by the same technic, not in normal ticks and mammalian tissues. However, Cowdry, in 1923, proved that by staining methods rickettsiae are "easily distinguishable from mitochondria and all other cytoplasmic and nuclear granulations." The demonstration of *Dermacentroxenus* in the lesions of Rocky Mountain spotted fever has also been confirmed by Nicholson working under Cowdry's direction in the Rockefeller Institute. Attempts to cultivate this micro-organism have been carried on with interruptions over a period of seven years, without success; but recently Schlesinger and I [16] have shown that tissue plasma cultures made from infected guinea-pig tissues and normal guinea-pig plasma are infective as long as the cells of the culture remain alive, a period which may, of course, be prolonged by transferring the tissue to fresh plasma. In this way, we kept the micro-organisms alive for four weeks. By the study of such cultures in serial sections, we were able to demonstrate a multiplication of the micro-organisms in endothelial cells, at first in situ in blood vessels in the tissue fragments, and later in endothelial cells that had migrated out into the surrounding plasma. Under these conditions, the micro-organisms were found in the cells of the cultures in numbers beyond anything found in the animal body. Our evidence, then, that *Dermacentroxenus rickettsi* is the cause of Rocky Mountain spotted fever may be thus summarized:

1. Its constant occurrence in lesions characteristic of the disease in man, monkey, rabbit and guinea-pig.

2. Its constant development and exhibition of definite morphologic sequences in ticks fed on infected animals, and the absence of similar micro-organisms in ticks proved to be noninfective.

3. The successful cultivation of the micro-organism in virulent form in tissue plasma cultures.

TYPHUS FEVER [17]

The occurrence of *Rickettsia prowazeki* in lice fed on typhus patients is so generally accepted as a constant phenomenon by workers all over the world that it is superfluous to assemble this type of evidence. It is well known that Ricketts was the first to observe these micro-organisms in lice, and that von Prowazek and da Rocha-Lima are given the credit for the accumulation of more voluminous observations and a more exact study of their distribution in the louse. Da Rocha-Lima devised the name *Rickettsia prowazeki*. It is to be noted, however, that in 1921, Sergent, Foley and Vialette [18] maintained that the micro-organisms they described in 1914, in lice collected from typhus patients, were identical with *Rickettsia prowazeki*. In their 1914 report, although they did not insist that they were the cause of typhus, they gave abundant evidence that these micro-organisms were found only in lice collected from typhus cases, and their description and measurements agree with those of *Rickettsia prowazeki*. In their 1921 publication, they furnish additional evidence that they were dealing in 1914 with *Rickettsia prowazeki*. Weigl, in 1920, showed us, in Poland, intracellular rickettsiae in lice, which he believed not to be *Rickettsia prowazeki;* and subsequent work by him makes it fairly certain that there is an intracellular rickettsia in lice, which is not related to typhus fever. Weigl himself has noted differences, however, which he believes to be differential. My own material is insufficient to settle this point.

Another factor that must not be lost sight of in a discussion of the etiology of typhus is the property of the blood of typhus patients and convalescents to agglutinate certain strains of proteus bacillus, usually designated as *B. proteus* X strains. It is well known that the serum from typhus patients agglutinates a number of bacteria and a number of strains of *Bacillus proteus;* nevertheless, the agglutination of *B. proteus* X-19 in very high dilutions is almost specific for typhus fever and is a valuable diagnostic adjunct, and has led workers seriously to consider it as a possible cause of typhus. Some of them have attempted to connect this bacterium with *Rickettsia prowazeki*. These attempts have led to interesting hypotheses, notably those of Weigl and of Breinl.

Weigl,[19] 1923, in a preliminary communication, reports astounding results of cultivation experiments performed with typhus-infected guinea-pigs and lice. He concludes that Plotz' bacillus, the *Microbion typhi-exanthematici* of Barykin and Kritsch, certain bacilli (the As-strains) isolated by Kuczynski, and the *Proteus bacillus* X strains of Weil, are all derivatives of *Rickettsia prowazeki*, which he accepts as the cause of typhus as it exists in the louse. The form assumed by *Rickettsia prowazeki* in man, he says, is unknown. Aerobic cultures from typhus-infected guinea-pigs yielded him *B. proteus* X strains, anaerobic cultures yielded Plotz' bacillus, and "intermediate forms" like the organisms of Barykin and Kritsch and Kuczynski. Weigl also states that *B. proteus* X strains developed in suspensions of *Rickettsia prowazeki* made from lice, though such suspensions have lost their virulence and were sterile for a period before the proteus organisms made their appearance. He regards the *B. proteus* X strains as mutants or atavistic throwbacks ("atavistischer Rückschlag") of *Rickettsia prowazeki*.

Breinl [20] also accepts *Rickettsia prowazeki* as the cause of typhus as it appears in the louse. *Bacillus proteus* X-19 he regards as the cultivatable nonvirulent form, while this micro-organism in the mammalian host exists in a form not yet demonstrated, either because of its small size or because of refractory staining properties.

Consideration of the foregoing statements makes it essential to review carefully the etiologic relationship of *Rickettsia prowazeki* to typhus.[21] In the louse, as

16. Wolbach, S. B., and Schlesinger, M. J.: The Cultivation of the Micro-Organisms of Rocky Mountain Spotted Fever (Dermacentroxenus Rickettsi) and of Typhus (Rickettsia Prowazeki) in Tissue Plasma Cultures, J. M. Res. 44: 231 (Dec.) 1923.

17. A complete bibliography up to 1920 is to be found in the Report of the Typhus Research Commission of the League of Red Cross Societies to Poland: The Etiology and Pathology of Typhus, Wolbach, Todd and Palfrey, Harvard University Press, 1922.

18. Sergent, Edmond; Foley, H., and Vialette, C.: Iconologie des Rickettsia signalées en 1914 chez des poux infectés de typhus exanthématique, Arch. d. Inst. Pasteur de l'Afrique du Nord 1: 215, 1921.

19. Weigl, R.: Die Beziehungen der X stämme zur Rickettsia Prowazeki, Ztschr. f. Hyg. u. Infektionskr. 99: 303, 1923.

20. Breinl, F.: Sur les relations du virus exanthématique et des bacilles Proteus X, Archiv. de l'Inst. Pasteur de Tunis 13: 208, 1924.

21. Woodcock, H. M.: Introduction to the Study of Haematophagy, J. Roy. Army M. Corps 37: 321, 418, 1921; Are the Active Principles of "Filter Passing" and "Ultramicroscopic" Viruses Living Organisms or Enzymes? ibid. 39: 243, 1922; Rickettsia Bodies as a Result of Cell-Digestion or Lysis, ibid. 40: 241, 1923; On the Modes of Production of "Rickettsia Bodies" in the Louse, ibid. 42: 1, 1924. Woodcock, in a series of polemics based on very little actual work, ingeniously and eloquently disposes of all rickettsiae on the hypothesis that they are the result of the ingestion "haematophagy" and intracellular digestion "haemabolism" of red blood corpuscles and of cell lysis in certain instances. He even suggests in the cases of trench fever and typhus "that the actual virus is an abnormal haematobolic enzyme." A careful perusal of Woodcock's four papers discloses no fact worthy of serious consideration other than that artefacts in smear preparations (he did not use sections) may simulate micro-organisms.

we have shown, the first appearance of rickettsia is in the form of a bacillary or filamentous structure in the intestinal epithelium. Almost invariably, lightly infected cells contain this form. As the number within the cell increases, the minute typical rickettsia of the literature appears, but in the same cell both filamentous and minute paired coccoid forms may abound. At a still later period more deeply stained paired forms, analogous to the residual forms of *Dermacentroxenus rickettsi* in ticks, may be found. In animal tissues short bacillary and diplococcoid forms are found in endothelial cells of blood vessels, and we believe also the very minute paired forms such as are found in great abundance in the epithelial cells of the digestive tract of the louse. The lesions of typhus in man are located in the blood vessels, and resemble in most respects those of Rocky Mountain spotted fever. There is, however, a more marked perivascular accumulation of cells, mostly of endothelial origin, and, in contrast to the latter disease, very extensive vascular and perivascular lesions in the central nervous system. The perivascular accumulations of cells give rise to very characteristic lesions (the so-called typhus nodules) in skin and brain.

Our commission to Poland was the first to use lice from a region beyond question free from typhus. Each of our lice stocks, including Mr. Bacot's stock from England, were carefully controlled and proved to be free from rickettsia-like micro-organisms. The result of our feeding experiments showed that the one peculiarity of lice nurtured on typhus patients was the acquisition of *Rickettsia prowazeki*. We showed, furthermore, that lice nurtured on typhus patients did not invariably acquire the ability to transmit typhus, and that whenever lice failed to transmit the disease they did not contain *Rickettsia prowazeki*. We also demonstrated identical micro-organisms in the lesions of typhus in man and in guinea-pigs. Our conclusions were that by the methods employed it was impossible to separate the virus of typhus fever from *Rickettsia prowazeki*. Attempts at cultivation in our hands failed, and although a number of workers have claimed to have cultivated *Rickettsia prowazeki*, no one has been substantiated, and the descriptions of the organisms do not tally with one another.

In 1919, Arkwright, Bacot and Duncan,[22] showed that the louse *Pediculus longiceps*, which commonly infests *Macaccus rhesus* monkeys, became infected with *Rickettsia prowazeki* when fed on monkeys experimentally inoculated with typhus. This alone is very important confirmatory evidence, because intracellular rickettsiae do not naturally occur in this louse. In 1922, Atkin and Bacot[23] proved that *Rickettsia prowazeki* that developed in *Pediculus longiceps* after feeding on typhus infected monkeys and after rectal injections of typhus blood were virulent for monkeys. In 1920, Weigl,[24] who introduced the ingenious method of feeding lice by anus, found that he could infect normal lice with *Rickettsia prowazeki* by injecting small quantities of leukocytes from typhus patients, and, what is more important, from guinea-pigs infected with typhus. However, he was working in a region where typhus was prevalent, and his experiments were made with guinea-pigs in which the disease had been carried on for only a short period of time. His experiments were confirmed and extended, in 1922, by Bacot and Segal,[25] who by the same method infected lice with *Rickettsia prowazeki* from guinea-pigs in which the strain had been maintained for a period of more than a year. Whereas Weigl nurtured his lice, after the injection of typhus material, directly on typhus-immune human beings, Bacot and Segal kept their lice alive by repeated anal injections of defibrinated blood from persons who never had had typus, thereby excluding any human source of rickettsiae. (It is necessary to use human blood to nurture lice, as the blood of animals is deleterious and destroys them because of the separation out of hemoglobin crystals.) At a still later date, Arkwright and Bacot,[26] working in Cairo, repeated, confirmed and extended these experiments, using material obtained from typhus patients, as well as from typhus infected guinea-pigs. The experiment of Bacot and Segal, however, I wish to emphasize because the typhus strain had been maintained for a period of more than a year in guinea-pigs, in that I believe it effectively disposes of the idea that *Rickettsia prowazeki* is an organism that accompanies the virus of typhus and is in itself not the cause. It seems to me a most extraordinary stretching of possibilities to maintain that a concomitant of the typhus virus in the form of an organism as delicate as *Rickettsia prowazeki* could persist for more than a year in an animal not naturally liable to typhus.

In all these experiments, Weigl's, Bacot and Segal's, and Arkwright and Bacot's, the lice that acquired *Rickettsia prowazeki* were proved to be infective for guinea-pigs; i. e., injection of emulsions of the intestinal tract produced typhus in guinea-pigs, thereby again upholding the thesis of the inseparability of *Rickettsia prowazeki* and the virus of typhus.

The last type of experimentation was that which Schlesinger and I [18] undertook with tissue plasma cultures. Using typhus material from guinea-pigs in which the strain had been maintained for a period of three years without the intervention of lice, we obtained in tissue plasma cultures, within cells of endothelial origin, micro-organisms having all the characteristics of *Rickettsia prowazeki* and exhibiting filamentous, short bacillary and diplococcoid forms. These cultures, when injected, produced typhus in guinea-pigs, and remained infective as long as the tissue cells of the culture survived, a period which was prolonged by transference to fresh plasma. We did not carry our experiments beyond the fourth week, which we regarded as sufficient, as no one has yet succeeded in preserving the virus of typhus in artificial culture mediums for a period of more than five days.

To summarize the evidence for the etiologic relationship of *Rickettsia prowazeki* to typhus, we have: (1) The occurrence of the micro-organisms in the lesion of the disease; (2) their occurrence as the sole distinctive acquisition of lice nurtured on typhus patients; (3) the failure to separate *Rickettsia prowazeki* from the virus of typhus by any method yet employed; (4) the cultivation of *Rickettsia prowazeki* in lice by the method of intestinal tract injection under conditions

22. Arkwright, J. A.: Bacot, A., and Duncan, F. M.: The Minute Bodies (Rickettsia) Found in Association with Trench Fever, Typhus Fever and Rocky Mountain Spotted Fever, Tr. Soc. Trop. Med. & Hyg. 13: 61, 1919.

23. Atkin, E. K., and Bacot, A.: Experiments on the Infectivity of Typhus Virus Contained in Lice (Pediculus Humanus and Pediculus Longiceps), Brit. J. Exper. Path. 3: 196, 1922.

24. Weigl, R.: Studies on Richettsia Prowazekii, Przegled Epidemjologiczny 1: 15, 1920.

25. Bacot, A., and Segal, J.: The Infection of Lice (Pediculus Humanus) with Rickettsia Prowazeki by the Injection per Rectum of the Blood Platelets of Typhus-Infected Guinea-Pigs and the Reinfection of Other Guinea-Pigs from These Lice, Brit. J. Exper. Path. 3: 125 (June) 1922.

26. Arkwright, J. A., and Bacot, A. W.: Observations on the Morphology of Richettsia Prowazeki Occurring in Lice (Pediculus Humanus) Infected with the Virus of Typhus Fever, Parasitology 15: 43 (March) 1923.

which virtually make the louse a living culture tube, and (5) the cultivation of *Rickettsia prowazeki* in tissue plasma cultures, using as a source of the virus a strain maintained for three years by continuous passage through guinea-pigs.

This evidence ignores the rôle of *B. proteus* X strains. It must be remembered that there are only a few cultures of this organism that are suitable for the agglutination test of typhus, and that these organisms have all been isolated from the urine of typhus cases, and there is no evidence that *B. proteus* X-19 invades human tissues. Breinl himself states that the presence of *B. proteus* in typhus is a matter of coincidence only. It seems more reasonable to explain the agglutination of these rare cultures by typhus serum on other hypotheses than that they represent mutants of *Rickettsia prowazeki*. I do not know what to say to those who, in the face of the evidence I have assembled, may still insist that *Rickettsia prowazeki* is not the cause of typhus, but simply invariably accompanies the virus of typhus, particularly to those who assume, like Breinl and Weigl, that the virus of typhus in man may be in ultramicroscopic form. The same line of reasoning may be applied to all infectious agents, whether or not cultivated in test tubes. *Rickettsia prowazeki* has not been demonstrated in the circulating blood with certainty. It can, however, be found in the lesions of the disease in man and in tissue plasma cultures. I fail to see good reason for assuming a form to exist in the blood outside the morphologic range of *Rickettsia prowazeki* with which we are familiar. The evidence for causal relationship of *Rickettsia prowazeki* to typhus is now so complete that it is necessary to elaborate complicated hypotheses to account for the facts on any other basis than the one simple explanation, which is that *Rickettsia prowazeki* is the cause of typhus.

CONCLUSION

The term "rickettsia" should be applied only to micro-organisms adapted to arthropods ("insects") and pathogenic for vertebrates and having the following characteristics: small size, pleomorphism, slight affinity for anilin dyes and intracellular habitat in the arthropod host.

We should keep in mind that we know practically nothing about the nonpathogenic, rickettsia-like, intracellular micro-organisms of arachnids and insects, whether casually present or in the rôle of symbionts. The work so far done in this field has been superficial and evasive of the main problems concerning relationships between micro-organisms and hosts; it has, however, served to obscure the status of the pathogenic rickettsiae. That *Dermacentroxenus rickettsi* is the cause of Rocky Mountain spotted fever, and that *Rickettsia prowazeki* is the cause of typhus, I regard as proved. There is strong presumptive evidence that *Rickettsia pediculi* is the cause of trench fever. It is certain that the rickettsiae represent a new group of micro-organisms, and probable that other pathogenic ones will be found.

Pessary as Cause of Cancer.—Were irritation and ulceration necessary for the production of cancer in the cervix, surely, as pointed out by Sir John Bland-Sutton, the pessary would be a chief cause. But no one has attributed any malicious influence to vaginal pessaries so far as cancer is concerned, though over 60,000 are sold yearly in this country. —L. W. Sambon: *Proc. Roy. Soc. Med.* **00**:115 (Sept.) 1924.

UNUSUAL COMPLICATION FOLLOWING USUAL OPERATIVE PROCEDURE FOR VARICOSE VEINS*

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The diagnosis and operative procedure for the condition of varicose veins have become so standardized and simple that any mention of them is superfluous and uninteresting. It is because of this simple obvious diagnosis that now and then one encounters a complication, grave in its consequences, resulting from too hasty judgment in the handling of such a case.

Within the last six weeks, two cases have been observed at our clinic, which emphasize and strike home vividly the extreme importance of a careful investigation in so self-evident a condition as varicose veins.

CASE 1.—A man, aged 32, was admitted to the surgical section of the National Military Hospital, being referred by two prominent physicians for resection of varicose veins of both legs. The history was essentially negative except for typhoid fever ten years before. Convalescence from the typhoid was complicated by pains in both thighs, which disappeared in about ten days. Shortly after this, the patient noticed prominence of the veins of both legs, and he could easily see them and trace their course. This prominence gradually increased and extended upward. There was no pain associated with this new condition, but he was told to have them operated on before an ulcer developed. The physical examination was negative except for the extremities, which showed marked prominence and slight bulging of all the superficial veins, extending from both feet upward to a point about 8 cm. above Poupart's ligament. There was very little tortuosity. The leg was raised and drained of its blood; then constriction was applied to the saphenous opening, and the leg lowered. Even after ten minutes, the veins did not show any filling. This, of course, meant that the deep or perforating veins were thrombosed or varicosed. In view of the history of typhoid, it was safe to assume that in this case the deep or perforating veins were thrombosed, preventing the filling of the superficial veins. Had this man been operated on, gangrene of the extremities would probably have resulted.

A few days later, a patient was admitted whose case clearly showed the folly of hasty diagnoses, and at the same time tragically confirmed our judgment in the first case. The following is interesting, because, while the condition is not frequently encountered, it is potentially present in every case of varicose veins:

CASE 2.—P. L., a man, aged 34, was admitted to the hospital, Nov. 8, 1924, with a rather rich past surgical history, including tonsillectomy, removal of hemorrhoids and varicose veins in the right leg in 1922, appendectomy, cholecystectomy and removal of varicocele and tumor of the spermatic cord in 1923. Ten days following the operation for varicose veins in 1922, he noticed the toes of the right foot becoming red and painful. A few days later they became purplish, and the second and third toes gradually became black. During this time, the pains were excruciating and lancinating in character. Physical examination of the extremities showed several linear scars on the right leg, the site of the removal of the veins in 1922. The second, third and fourth toes were gangrenous; the first and last toes purplish red and cold; the purplish hue extended back to the os calcis behind and to the astragalus in front; and from this point up to the knee joint, the extremity was cold and reddish purple. The dorsalis pedis was scarcely palpable.

* From the Surgical Service of the National Military Hospital.

The course of events in this case was obvious. At the time of the original operation, no test was made to determine the patency of the deep veins or the perforating veins, which undoubtedly were thrombosed or varicosed; and by removing the superficial veins, which probably were not varicosed but merely prominent, owing to the establishment by Nature of a collateral circulation, his only source of blood supply and venous return from the knee down was removed. That this was the case is shown by the fact that from the knee to the hip joint the condition of the tissues was normal, since no veins were removed from this portion of the extremity. The collateral circulation now reached a point 8 cm. above Poupart's ligament.

Midthigh amputation under local anesthesia was performed by Dr. Fisher, and the deep and perforating veins were found to be thrombosed. Here an entire extremity was sacrificed, not to mention the physical suffering in the interim, because of the failure in the first place to apply a very simple test to the circulation.

In every case of varicose veins, the Trendelenburg test should be applied to ascertain the condition of both the superficial and deep veins; and in case of doubt, as Dr. Beckman was accustomed to say at the Mayo Clinic, when the collateral circulation extends above Poupart's ligament, and no intra-abdominal cause for venous obstruction exists, the deep veins should be suspected.

TREATMENT OF ARSPHENAMIN "ENCEPHALITIS" WITH SODIUM THIOSULPHATE

REPORT OF CASE *

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In 1920, Ravaut [1] called attention to the usefulness of sodium thiosulphate in a number of conditions, including certain of the unfavorable sequelae of neoarsphenamin administration. He gave three case reports of late reaction to neo-arsphenamin. The patients in all three cases had developed an arsenical dermatitis, and in addition one patient had symptoms and signs referable to the liver. Prompt recovery occurred in all three following the administration of sodium thiosulphate. Dennie and McBride [2] report that twenty-five cases of arsphenamin dermatitis and ten cases of arsenic jaundice have been treated successfully. They also bring out the fact that sodium thiosulphate is curative in any form of poisoning due to arsenic, mercury, lead or bismuth. In the discussion following the report of Dennie and McBride, it seems evident that sodium thiosulphate has had an extensive clinical trial and that it has a wide usefulness. Other reports than those mentioned have been found in the literature, but nowhere has been noted the use of sodium thiosulphate in the condition spoken of as "hemorrhagic encephalitis." For this reason it would seem that the report of such a case is not out of place.

REPORT OF CASE

R. H., a boy, aged 4, white, admitted to the Children's Hospital, November 27, was found on physical examination to have no abnormality of interest. His weight was 15.2 kg. (33½ pounds). The blood Wassermann reaction was strongly positive. The cerebrospinal fluid showed no abnormality. The mother gave a history of having had eight abortions. The older brother had parenchymatous keratitis. The blood of both the mother and the brother gave a strongly positive Wassermann reaction. The patient had had no antisyphilitic treatment previously.

November 28, he was given 0.35 gm. of sulpharsphenamin intravenously and 5 mg. of mercuric chlorid intramuscularly. November 30, the same medication was repeated. December 2, he received 0.35 gm. of sulpharsphenamin but no mercury. No reaction whatever was noted following any of these treatments, except that it was observed in a review of the record that the pulse rate increased on the day following the first sulpharsphenamin treatment (November 29), and the mean of the pulse rate curve did not return to its previous normal value until the remission of all other symptoms. Except for the increase in the pulse rate, nothing unusual occurred until the morning of December 5, when the patient complained of nausea and headache. He was drowsy all the morning. Emesis occurred at 7:30 a. m., 10 a. m., 4 p. m. and 6 p. m. At 2 p. m. he had a general convulsion followed by stupor, and at 6 p. m. another convulsion followed by coma.

Treatment with sodium thiosulphate was begun at 7 p. m., December 5. He was given intravenously 0.46 gm. of sodium thiosulphate (0.03 gm. per kilogram of body weight) in a 5 per cent. solution every three hours for five doses. A convulsion, at 10:45 p. m., followed the second injection. This convulsion was very severe. The lips and ears were cyanotic, the face was flushed, the pulse was irregular, and the respirations were gasping in character. December 6, a mild convulsion occurred at 3 and 6 a. m. He became less deeply comatose, and at intervals could be partially aroused. When aroused he complained of pain in the extremities, and during the morning twitchings were observed in his hands and feet. Toward noon the patient seemed brighter, but still, for long periods at a time, he did not recognize his mother. Beginning at noon, December 6, he was given 0.5 c.c. (7 minims) of a 1:1,000 solution of epinephrin hypodermically every four hours for five doses. Caffein citrate in 0.03 gm. (one-half grain) doses was started at 2 p. m. and given every four hours for five doses. Fluid was administered by mouth and by rectum, a large amount being taken. By 4 p. m., December 6, the patient was brighter, and his pulse was strong and regular. At 6 p. m., he talked a little, but still was somewhat irrational. At 8 p. m., he became distended and complained of abdominal pain. Though he was still stuporous, he could be aroused readily throughout the late afternoon and evening. He rested well throughout the night, and on the morning of December 7, he was clear mentally. Except for a tired and listless appearance, he was quite himself again. From this time his course was uneventful, and he left the hospital apparently in perfect health, December 9.

COMMENT

Fortunately, "hemorrhagic encephalitis" as a result of arsphenamin administration is an uncommon occurrence. It is practically always a serious event and usually a fatal one. Milian [3] reported one case cured by means of epinephrin. Beeson [4] has collected reports of three cases, including that of Milian, in which recovery followed epinephrin administration. However, others have failed to relieve this condition by this means. Whether or not epinephrin is to be relied on in hemorrhagic encephalitis, the knowledge of another useful drug for so serious a condition is a distinct advantage. It is to be noted in the case here reported that definite and marked improvement had taken place before epinephrin was given. This improvement must have been the result of sodium thiosulphate administration, since patients with symptoms of such severity

* From the Department of Pediatrics, State University of Iowa College of Medicine.

1. Ravaut, P.: L'importance des traitments internes en dermatologie: l'emploi du cacodylate de soude à hautes doses et de l'hyposulfate de soude, Presse méd. 28:73 (Jan. 28) 1920.
2. Dennie, C. C., and McBride, W. L.: Treatment of Arsphenamin Dermatitis, Mercurial Poisoning and Lead Intoxication, J. A. M. A. 83: 2082 (Dec. 27) 1924. McBride, W. L., and Dennie, C. C.: Treatment of Arsphenamin Dermatitis and Certain Other Metallic Poisonings, Arch. Dermat. & Syph. 7:63 (Jan.) 1923.
3. Milian, quoted by Beeson (Footnote 4).
4. Beeson, B. B.: Arsphenamine and Neo-Arsphenamine plus Adrenaline, Am. J. Syph. 3:192 (Jan.) 1919.

under these circumstances have not been known to improve or to recover when untreated.

The diagnosis of "hemorrhagic encephalitis" in this case might be questioned. The condition described in this case corresponds in all important details to that in previously reported cases. It also corresponds to that in an unreported case observed by a member of our staff, in which case the diagnosis was confirmed by necropsy. The illness was practically afebrile, and occurred in a child who had had no convulsions previously. The very deep coma, with such prompt recovery following medication known to be antagonistic to arsenic, would seem to make the diagnosis certain.

SUMMARY

A child developed "hemorrhagic encephalitis" three days after the third intravenous injection of sulpharsphenamin. Prompt and complete recovery followed the intravenous administration of sodium thiosulphate.

POSTDIPHTHERIC PARALYSIS OF THE DIAPHRAGM

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Postdiphtheric paralysis of the diaphragm is a complication so universally associated with 100 per cent. mortality, both in the literature and in the minds of those engaged in the practice of medicine, that an undoubted instance presenting a typical picture with grave symptoms eventuating in complete recovery seems of sufficient interest to warrant a somewhat detailed report.

In general, the various types of paralyses so commonly associated with diphtheria are estimated to occur in from 10 to 25 per cent. of all infections with the Klebs-Loeffler bacillus. The time of onset varies from three or four days (as mentioned by Tice [1] for severe cases) to from one to six or seven weeks (as estimated by Osler [2]).

Concerning the frequency of true diaphragmatic paralysis in diphtheria, there is considerable variance among the authorities, Tice quoting Jochman's series of 130 cases with an incidence of 3.8 per cent. for diaphragmatic involvement. The most complete report of this condition discovered was one by Mixsell and Giddings,[3] who cite eight cases of diaphragmatic paralysis in 4,259 cases of diphtheria, these eight cases representing about 0.1 per cent. of the total, and approximately 8.1 per cent. of the various forms of paralysis occurring in this series. The mortality for these cases of diaphragmatic paralysis was 100 per cent., and the authors stated that they saw no reason why the mortality should be otherwise in true bilateral paralysis, unless artificial respiration was employed. The description given by these authors of the symptomatology of diaphragmatic paralysis is here quoted as typical:

> Both limbs are as a rule drawn up; both thighs are flexed and pressed against the abdomen. Respiration is carried on by the voluntary upraising of the shoulders for each respiration, and each effort is accompanied by the contractions of the intercostal muscles. The entire breathing is intercostal in character, and is marked by dyspnea. There is also a well defined contraction of the diaphragm, and a tendency to scaphoid abdomen. As a rule, the diaphragmatic paralysis is preceded by vomiting, tachycardia, dyspnea and a weak, irregular, compressible pulse. The patient is very restless; there is usually a dry cough, and the patient complains of being unable to swallow (involvement of the esophagus); but the mind is clear, and the expression is not an anxious one. The face is pale and sometimes cyanotic, and frequently there are acute attacks of epigastric pain.

In this series of eight fatal cases, the average duration of symptoms before death was thirty-six hours; the shortest was eight hours and forty minutes; the longest, eighty hours.

REPORT OF CASE

H. C., boy, aged 4 years, seen in the office on the evening of Oct. 27, 1923, had a typical diphtheric membrane over both tonsils and the posterior pharyngeal wall, and a small patch on the uvula, and considerable nasal involvement. The parents stated that he had been sick four days, but that they thought he had a cold. The rectal temperature was 104; the pulse, 130, regular but rather weak. No other pathologic change was apparent, except that the child was very toxic. An intramuscular injection of 15,000 units of antitoxin was given immediately (the parents would not consent to a larger dose until the results of the throat culture were determined). During the next three days, antitoxin was given freely, 65,000 units in all being used, a part of it intravenously. The child was extremely toxic, emesis occurring frequently.

On the evening of October 30 (one week after the onset of symptoms), a definite change became apparent. The child became cyanotic; the muscles were rigid; the thighs were partly flexed; and the back was arched slightly, with the abdomen somewhat scaphoid. Respiration practically ceased for a time, being as low as 4 a minute and entirely thoracic in character. The pulse ranged from 170 to 200 or more, sometimes barely perceptible at the wrist. A consultant was called and considered the condition hopeless as a well marked paralysis of the diaphragm, with death imminent. As an experimental measure, a hot mustard tub bath was given. Following this, artificial respiration was employed, together with the free use of oxygen. Epinephrin, caffein, sodiobenzoate and strychnin were all used hypodermically, epinephrin being repeated frequently, as it seemed most beneficial. Artificial respiration was carried on with the additional measure of forcing oxygen into the child's lungs for about six hours at intervals. When the artificial respiration was stopped, a sort of Cheyne-Stokes form of breathing developed, and the cyanosis returned. For the next four or five hours, it was necessary to resort occasionally to the artificial respiration. The pulse quality improved, although the rate remained very high. At the end of about twelve hours from the onset of the paralytic symptoms, the child's respiration had improved so that he was able to breathe fairly well. Following this attack, the respiration rate was very high throughout the course of the illness, at times being 72 a minute. From time to time during the subsequent ten days, moist râles were heard at the base of the right scapula, but no area of consolidation developed.

November 11, a yellowish discharge developed from the right ear; November 13, both ears were discharging freely, but with no apparent signs of mastoid involvement. November 17, in spite of free drainage of both ears, a definite mastoiditis developed, more marked on the right side, and the patient was taken to the Methodist Hospital for operation by Dr. H. M. Walker. Simple mastoidectomy was performed on the right and left side, successively, the operations being separated by a twenty-four-hour interval and by the transfusion of 200 c.c. of whole blood.

On entrance to the hospital, in connection with roentgenograms of both mastoids, the chest was also subjected to fluoroscopic and roentgen-ray examination, with a report from Dr. E. N. McKee that the heart was rather enlarged and the

1. Tice, Frederick: Practice of Medicine, Hagerstown, Md., W. F. Prior Company, Inc., 1917.
2. Osler and McCrae: Principles and Practice of Medicine.
3. Mixsell, H. R., and Giddings, Emanuel: Certain Aspects of Postdiphtheritic Diaphragmatic Paralysis: Report of Eight Fatal Cases in Four Thousand Two Hundred and Fifty-Nine Cases of Diphtheria, J. A. M. A. 77:390 (Aug. 20) 1921.

chest normal. The diaphragm was extremely high, some four or five interspaces higher than normal, and the excursion was practically nil, the act of respiration being thoracic. This examination was made seventeen days after the onset of paralytic symptoms.

Convalescence was uncertain for some time, but the child was finally able to leave the hospital and eventually made a complete recovery. A recent physical examination revealed no abnormality.

SUMMARY

The etiology, clinical symptoms and roentgen-ray findings in this case prove it to be an undoubted instance of bilateral postdiphtheric paralysis of the diaphragm followed by complete recovery.

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BRONCHIAL ASTHMA AND ALLIED ALLERGIC DISORDERS.

PRELIMINARY REPORT OF A STUDY UNDER CONTROLLED CONDITIONS OF ENVIRONMENT, TEMPERATURE AND HUMIDITY *

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Recent work in allergy has emphasized the importance of the inhaled substances in the production of bronchial asthma and other allied disorders. Many patients exhibiting sensitivity to the inhaled proteins are sensitive to house dust, either alone or in conjunction with other proteins of this type. In Cooke's [1] series of 327 cases, 69.8 per cent. reacted to the inhaled proteins, and of these 109, or 33 per cent., were sensitive to house dust.

Because of the importance of the inhaled substances in general and house dust in particular, it seemed appropriate to attempt to devise a method whereby these patients could be studied under controlled conditions of environment. It soon became apparent that observations made under these conditions should incorporate records of room temperature and relative humidity and these, therefore, were included.

The purposes of this study may conveniently be stated under the following headings and the reasons for each briefly described.

I. TO HAVE AN OPPORTUNITY TO INTRODUCE INTO A PATIENT'S ENVIRONMENT WHATEVER INHALED SUBSTANCE IS DESIRED, IN ORDER TO OBSERVE THE SUBJECT'S CONSTITUTIONAL REACTION TO IT

It is the rule, rather than the exception, to find that patients often exhibit multiple sensitivity to biologically unrelated allergens; and it is equally true that exposure to many of these substances, or their ingestion, in the case of foods, will not produce clinical symptoms. Why these reactions occur, and how to interpret them, is a baffling problem. It would seem that so far as inhaled substances are concerned, the opportunity to introduce into the patient's environment qualitatively and quantitatively each of those previously shown by cutaneous or intracutaneous tests, to produce reactions, would be of value in determining the relative importance of each.

II. TO STUDY THE EFFECT OF INTRODUCING HOUSE DUST INTO THE ENVIRONMENT OF A PATIENT SHOWN BY TEST TO BE SENSITIVE TO AN EXTRACT OF THE IDENTICAL DUST

House dust is a highly complex substance, obviously containing many proteins, and because of this, almost insusceptible of analysis. Does any given house dust contain a specifically allergic substance peculiar to it, or is it a composite substance, reaction to it depending on sensitivity to one or more of its ingredients? In answer to this, it may be said that there are those who are specifically sensitive to it by intradermal tests and entirely insensitive to all other known inhalation proteins.

Under the controlled conditions of our experiment it would seem that should a patient, insensitive to all known inhalation allergic substances, be subjected to the introduction of house dust into his immediate surroundings, and should he have an immediate allergic reaction therefrom, it would be shown that house dust contains one or more specifically allergic substances peculiar to it.

III. TO DETERMINE QUANTITATIVELY, IF POSSIBLE, THE AMOUNT OF ALLERGIC SUBSTANCE NECESSARY TO PRODUCE SYMPTOMS IN ANY GIVEN SPECIFICALLY SENSITIVE INDIVIDUAL

To determine whether or not in any particular case, or in all cases, a definite quantity of allergen will produce allergic coryza (vasomotor rhinitis) and a greater quantity bronchial asthma.

Similarly, to determine whether or not a definite concentration of pollen will produce hay-fever and a greater quantity hay asthma.

Sensitivity to house dust can be studied under controlled conditions of environment in a relatively dust-free room, such as we have attempted to provide. The efficiency of the air-cleaning apparatus can be determined by actual dust counting, using the method and apparatus described by Hill and Armspach.[2] Should the air-cleaning apparatus be efficient to the point of removing a quantity of dust, sufficient to keep a patient with dust-asthma free of symptoms, then it would be easily possible to ascertain the amount of dust that would have to be introduced to produce an asthmatic attack. The amount of dust introduced into a room can be previously weighed, and its concentration in the room determined by dust counts. This method may be used to determine the amount of specific pollen necessary to produce hay-fever. The relation between the amount of pollen in the air and the severity of the hay-fever symptoms has been studied by Scheppegrell,[3] by exposing gelatin plates at a definite distance from pollinating plants, under known conditions of wind velocity, and counting the amount of pollen caught on the plates. By studying hay-fever patients under controlled conditions of environment, it may be possible to find the answer to some of the following questions: Is hay-fever produced in all pollen-sensitive subjects by the same amount of pollen in the air? Are the

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1. Cooke, R. A.: Studies in Specific Hypersensitiveness, New Etiological Factors in Bronchial Asthma, J. Immunol. 7:147 (March) 1922.

2. Hill, E. B., and Armspach, O. W.: Further Studies in Methods of Dust Determination, J. Am. Soc. Heating and Ventilating Engineers 25:289-304; 391-406, 1919.

3. Scheppegrell, William: Hay Fever and Asthma, Philadelphia, Lea & Febiger, 1922.

symptoms produced similar in all cases, or does sensitivity vary to such an extent that the amount of pollen necessary to produce hay-fever in one patient is innocuous to another?

Information is being sought as to whether or not there exists a quantitative relationship between the amount of allergen necessary to produce allergic coryza and that which is necessary to produce bronchial asthma. The sneezing, coryza and lacrimation that often precedes by a considerable time interval an asthmatic paroxysm indicate that a certain amount of allergen produces allergic coryza, and that when it is present in greater concentration, asthma develops. Similarly, it is clinically true that many patients suffering from true pollen hay-fever develop hay asthma year after year, always manifesting itself several weeks after the onset of the hay-fever season. This would seem to indicate that pollen asthma, in these patients at least, is their reaction to greater pollen concentration as the season advances.

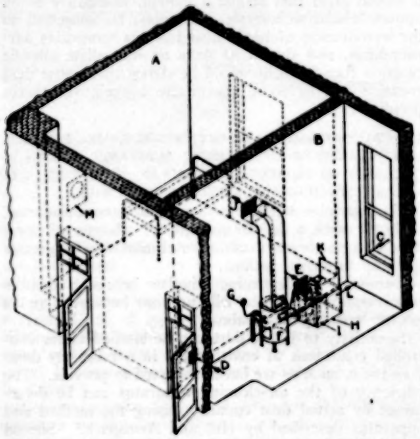

Fig. 1.—Plan of special room, showing installation of air-cleaning apparatus.

IV. TO DETERMINE THE EFFECT OF ALTERATIONS OF WET AND DRY BULB TEMPERATURE AND RELATIVE HUMIDITY IN ALLERGIC AND OTHER TYPES OF BRONCHIAL ASTHMA

The condition of the asthma patient varies with the weather. Paroxysms, or exacerbations of symptoms often precede a storm or occur when the weather changes or when the day is humid. Wilmer[4] has described an atmospheric type of asthma. Where symptoms are produced or aggravated by the atmospheric conditions preceding a storm or a sudden drop in temperature, it seems reasonable to attribute this to the increased wind velocity at these times, which increases the amount of air-borne substance reaching the patient.

Very often the physician is required to recommend or to decide on the advisability of a change of climate for the asthma sufferer. Many of these patients are in the group in which allergic sensitivity cannot be demonstrated. Often there is a pathologic condition of the nose or extensive suppurative disease of the nasal accessory sinuses, which, despite the most skilful surgery, leaves the patient unrelieved of asthma. In an effort to determine the probable result of climatic change, it has seemed advisable to include in our study the effect of alterations of temperature and relative humidity.

V. TO CONSIDER THE PRACTICABILITY OF INSTALLING DUST-REMOVING APPARATUS IN THE SLEEPING QUARTERS OF SELECTED CASES OF ASTHMA AND HAY-FEVER SUFFERERS

Consideration of this, should the installation of such apparatus prove feasible, would seem applicable to the following groups of cases:

Cases of dust-asthma with nocturnal attacks, which are unrelieved despite most painstaking investigation and alteration of house and bedroom environment.

Cases reacting to house dust when attempts at specific desensitization with the particular dust has brought no relief. It is reasonable to suppose that desensitization with an unknown substance, dosage being of necessity arbitrary, would be of doubtful value. Such has been our experience.

Patients having hay-fever or hay asthma, in whom specific desensitization cannot be used or has been tried with complete failure. That complete failure occurs in a small percentage of cases has been the experience of all workers in this field. Discussion of the reasons for this failure is not germane to this paper, but the fact remains.

The treatment room (Fig. 1 *A*) is a room approximately 14 by 16 feet with a 14 foot ceiling. The walls are of brick, plastered and painted. The floor is of wood, waxed. Doors and windows are carefully weather stripped to prevent the infiltration of outside air. The air-cleaning apparatus is located in the adjoining room, *B*. Air is admitted to the cleaning apparatus either through the open window, *C*, the return air duct, *E*, or the hot air register, *D*, the room *B* serving as a large mixing chamber. *F* is a small unit type of air washer capable of delivering 500 cubic feet per minute of washed air. The self-contained fan is driven by a one-eighth horse power motor, the speed of which is controlled by the rheostat, *G*. Hot or cold water is supplied to the spray in the air washer in order to regulate the wet bulb temperature, and an auxiliary steam coil is provided to regulate the dry bulb temperature. The inlet to the fan is connected to a sheet metal mixing chamber, *H*, in which is located a removable canvas screen, *I*, which serves as an auxiliary dust remover. The return air duct, *E*, enters the side of the mixing chamber, and the return air flow is controlled by a damper. The air entering the chamber from room *B* is controlled by raising or lowering the door, *K*. All the air delivered to room *A* must pass through the canvas screen and the air washer, and is delivered to room *A* through duct *J*.

Refrigeration for the depression of the wet bulb temperature is not yet provided, and in experiments to date ice was placed in the air washer for this purpose. Recording wet and dry bulb thermometers and a recording barometer are located in room *A*. Check readings of wet and dry bulb temperature are obtained with a sling psychrometer. The Vernon Hill dust counting apparatus is used for dust determination. Briefly, this apparatus consists of an air syringe, which causes a

4. Wilmer, H. B.: Report of a Series of Cases of Asthma, with Special Reference to Diagnosis and Treatment, Tr. Coll. Phys. Philadelphia 45:467, 1923.

jet of air of known quantity to impinge on an adhesive surface, which is examined under a microscope, and the number and form of the dust particles are noted. Although sufficient quantitative data are not as yet available to give a definite statement as to the absolute efficiency of the dust removing apparatus, it was apparent that large dust particles were largely eleminated; the small particles to a lesser extent.

REPORT OF CASES

CASE 1.—M. G., a white man, aged 51, admitted to the University Hospital, to the service of Dr. Alfred Stengel, Jan. 10, 1924, for seven years had had very severe attacks of bronchial asthma, at first at varying intervals, but later becoming more frequent, until on admittance, he suffered almost continually and had severe attacks almost every day. He had been entirely incapacitated for work for the past

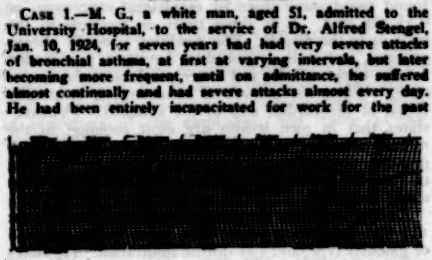

Fig. 2.—Barometric pressure from January 14 to January 21, inclusive.

five years. The attacks lasted from one to several hours, and were somewhat relieved by the inhalation of asthma powders or the hypodermic use of epinephrin. Between attacks he complained of shortness of breath, and was rarely free of symptoms. The attacks were especially brought on by his being in a stuffy room where there were many people, or, for that matter, by being in a crowd on the streets. This was so true that he had developed a crowd phobia. He was so much better in the open air that for several years he had spent most of his days in Fairmount Park. The patient complained of no other allergic disorders, nor had he any known sensitivity to food, pollen or animal epidermal proteins.

The patient was short, stocky and quite dyspneic. His face was ruddy and cyanosed. The chest was barrel shaped and markedly emphysematous; breathing was labored and practically entirely abdominal. On auscultation, emphysematous breathing and numerous musical asthmatic râles were heard diffusely over both lungs. Roentgen-ray examination of the chest showed exaggerated hilum and trunk shadows. Roentgen-ray examination of the nasal accessory sinuses was negative. Tests for protein sensitivity were negative for all the ordinary foods and pollens. Of the animal epidermal proteins, cattle hair was considered positive. An intradermal test with house dust prepared according to the method of Coca[5] produced an irregular wheal 2.5 by 3 cm. in diameter, with a large surrounding area of erythema.

During the patient's stay in the ward from January 10 to January 18, he was uncomfortable, being quite dyspneic during the day time, with numerous asthmatic paroxysms during the night, requiring hypodermic injections of epinephrin. He spent many hours each day sitting at an open window in order to breathe more easily. January 18, at 1 p. m., he was admitted to the special room, the air in the room having been washed for twenty-four hours prior to this. The patient was uncomfortable the first afternoon and night, requiring an injection of epinephrin. He was kept in the room until January 24, except for momentary sojourns to the bath room. From January 19 to January 24, during which time the air washer was run continuously, the patient was quite comfortable, requiring no epinephrin. He was able to sleep recumbent every night, using one pillow. January 24, at noon, he was sent into the ward in a cubicle containing two beds and a window. He was the only occupant. Within two hours he began to feel bad; he requested to be allowed to go back to the room, but was refused. During the rest of the day he was very uncomfortable. In the evening he was unable to sleep and could not remain in bed. The intern visited the ward shortly after midnight and, noticing the patient's distress, allowed him to go back to the room. In fifteen minutes he felt much relieved and slept the rest of the night.

February 3, at 12:50 p. m., the patient was observed in the room and was quite comfortable. He was requested to leave the room for a moment, during which time, without his knowledge, about 2 ounces of house dust, finely powdered, obtained with a vacuum cleaner, was scattered and swept around the room. There was sufficient in the room to cause a distinct dusty odor, but care was taken so that no visible clumps of dust were left on the floor. The air washer (which makes a certain amount of noise) was kept running in order that the patient might not be suspicious that anything had been changed in the room during his absence. At 1 p. m. he got up, said that he felt very bad, complained of being smothered, would not sit still, insisted on leaving the room, requested a hypodermic, and said that he was dying. At 1:12 p. m. he was extremely dyspneic, his pulse rate was 114, he seemed unable to walk, and was taken out of the room in a wheel chair and placed next to an open window in the hall. He got down on his knees by the open window gasping for breath. He was given a hypodermic injection of epinephrin, and within a half hour the attack subsided. The room was thoroughly cleaned by wet mopping and the bedding changed. The air washer was run for seven hours before the patient was admitted. He returned to the room at 8 p. m. and had a comfortable night.

We thought that possibly the attack produced by the massive quantity of dust used might have been due to mechanical irritation and not to a truly allergic substance. Therefore, February 5, an equal amount of an allergically inert material, wood charcoal, in extremely fine powder, was scattered in the room in sufficient quantity to be easily discernible in the air. The patient experienced no reaction to this.

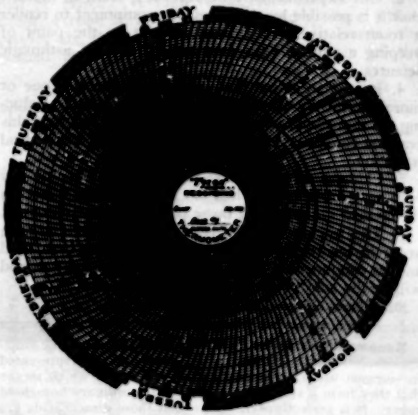

Fig. 3.—Wet and dry bulb temperatures from January 14 to January 21, inclusive.

This patient, according to the history and to intradermal tests, is a true case of house dust asthma. It was possible for him to be comfortable in a relatively dust free environment. The introduction into his surroundings of a massive quantity of house dust produced a true allergic constitutional reaction. A similar quantity of powdered charcoal, introduced to obviate the possibility of mechanical irritation as explanatory of the patient's reaction to dust, produced no effect.

5. Coca, A. F.: Studies in Specific Hypersensitiveness: The Preparation of Fluid Extracts and Solutions for the Use in the Diagnosis and Treatment of the Allergies, J. Immunol. 7:143 (March) 1922.

Observations were made of barometric pressure and wet and dry bulb temperature prior to and during the first three days of the patient's sojourn in the special room. Alterations in these produced no demonstrable effect.

CASE 2.—Another patient was observed in the room, whose condition was obviously caused by chronic sinus infection. In substantiation of this diagnosis were the facts that her illness immediately followed an attack of influenza and that the roentgen-ray studies showed extensive pathologic changes of the ethmoid, sphenoid and maxillary sinuses. All the ordinary tests for allergic sensitivity were negative. She remained practically continuously in the special room for five weeks, without any appreciable change in her condition or in the frequency of her asthmatic seizures. Continuous observations were made and recorded of the changes of barometric pressure and wet and dry bulb temperature. Artificial changes were arbitrarily produced according to the methods described. We were unable to demonstrate any appreciable effect on the patient's condition by these changes.

SUMMARY

1. A room has been installed in the University Hospital for the study of bronchial asthma, allergic coryza and hay-fever, where it is possible to observe these patients under controlled conditions of environment in relation to the presence and quantity of specifically allergic inhalation substances.

2. Provision has been made to study the effects of alteration of barometric pressure and wet and dry bulb temperature in these disorders, including those cases of asthma in which allergic sensitivity cannot be demonstrated.

3. Our experiments, here recorded, seem to indicate that it is possible by means of our equipment to render a room relatively dust free, efficient to the point of keeping a patient with dust asthma free of asthmatic seizures.

4. It seems evident that house dust contains one or more specifically allergic substances capable of producing an immediate constitutional reaction, and that this reaction cannot be explained on the basis of mechanical irritation.

5. Changes of barometric pressure and wet and dry bulb temperature have had no demonstrable effect on the clinical symptoms of those patients so far observed.

6. This report is to be regarded as preliminary, in order to record the type of room which has been used and its equipment. Further studies are in progress and will be the subject of further communication.

2025 Spruce Street—215 South Broad Street.

Monosaccharids Better Food than Disaccharids.—The disaccharids, otherwise known as the sucroses, are represented in common use by cane sugar and beet sugar, which means that they form a very large proportion of ordinary household sugar. It is perfectly well known that these disaccharids are both indigestible and irritating, especially when concentrated. Their indigestibility is proved by the fact that they must be converted into a monosaccharid before they can be utilized by the economy. Their irritant effect displays itself not only on the gastric mucosa, but even on the unbroken skin, as seen in diabetics, and in grocers and others whose business it is to handle sugar. These devastating disaccharids are the form in which "sugar" is presented to the multitude. Babes and sucklings are plied with it, adolescents are encouraged to take it, and it constitutes the stock-in-trade of the tea table, the pudding dish and the lollipop shop. The monosaccharids, fructose, natural dextrose (grape sugar), and invert sugar (honey) are easily digestible and produce no ill effects.—Williams, Leonard: *Practitioner* **114**:70 (Jan.) 1925.

THE BLOOD COUNT IN CARCINOMA OF THE ESOPHAGUS *

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The most important disease of the esophagus is cancer. Only cancer of the uterus, female breast and stomach outnumber it. McCrae [1] in 5,480 necropsies found twenty-nine cases of esophageal carcinoma, or 0.53 per cent. It is three times as frequent in the male as in the female. The condition is nearly always primary, and it is described as having a predilection for the upper, middle and lower portions of the esophagus. When the growth is secondary, it is usually found at the cardiac end of the stomach. (Vinson [2] states that in men lesions are most common in the middle third of the esophagus, whereas in women growths predominate in the upper third.) The fact is that the primary neoplasm may occur anywhere along the gullet.

Ewing [3] describes the gross picture as of three types: (1) flat infiltrating ulcer; (2) more bulky polypoid or globular type, and (3) diffuse infiltration. He states that the usual microscopic picture is that of squamous cell carcinoma (acanthoma), and that adenocarcinoma, when it does occur, resembles similar tumors of the stomach.

The most important differential diagnoses to consider are stricture (inflammatory) and spasm of the esophagus. An added difficulty here is that the blood count in all these conditions may be alike, particularly the hemoglobin and red blood cell counts. Apparently, it is not well known that in a new growth of the esophagus the blood count is normal or raised. The following case brings this clearly to mind.

CASE 1.—A widow, aged 51, admitted to the hospital, Aug. 8, 1923, was discharged, August 22, with the diagnosis of carcinoma of the esophagus and with her condition unchanged. Her chief complaint was progressive difficulty in swallowing foods for three years, first solids and later liquids. The patient also complained of epigastric pain, backache, dyspnea on exertion and loss of 18 pounds (8.2 kg.) in five weeks. The patient had been confined to her bed, but was not acutely ill. There was acne of the face and body. Moderate kyphosis and deformity of the sternum were present. Both supraclavicular fossae were sunken, the right more so than the left. Tenderness was elicited over the dorsal spines. The d'Espigne sign was positive to the seventh and eighth dorsal vertebrae.

Provisional diagnosis of stricture or spasm of the esophagus (cardiospasm) was made, with the qualifying addendum that benign mediastinal neoplasm was to be considered and syphilis to be ruled out.

The patient was fairly well nourished; she was somewhat neurotic, her history was of three years' duration, and hence neoplasm was not considered. This functional view of the case was strengthened when the blood count was reported: 90 per cent. hemoglobin, 4,640,000 red blood cells (color index 0.9), 10,000 white blood cells, 93 per cent. polymorphonuclears, 6 per cent. lymphocytes and 1 per cent. monocytes. A smear showed normal red cells. (It was concluded that the normal count ruled out a carcinoma.)

The systolic blood pressure was 115, the diastolic, 70. A stomach tube was passed, but stopped abruptly at 12 inches (30 cm.) from the incisor teeth, and fresh blood was noted on the tip.

* From the Admitting Department, Mount Sinai Hospital, New York.

1. Osler and McCrae: Modern Medicine, Ed. 2, Philadelphia, Lea & Febiger **3**: 9-98, 1914.

2. Vinson, P. P.: Carcinoma of the Esophagus, Am. J. M. Sc. **166**: 402 (Sept.) 1923.

3. Ewing, James: Neoplastic Diseases, Ed. 2, Philadelphia, W. B. Saunders Company, 1922, p. 857.

An esophagoscopy was performed. At 27 cm. from the incisor teeth there was a mass protruding from the wall. It was smooth and apparently had a sharp edge. At 30 cm. the mucosa was much deeper red in color and bled easily. The lumen became narrow here. A bit of tissue was removed and reported as squamous cell carcinoma.

A blood count, August 17, was recorded as 100 per cent. hemoglobin, and 5,000,000 red blood cells. Roentgen-ray examination showed an incomplete obstruction at about the middle of the esophagus. The site of the obstruction was irregular, and the appearance was described as resembling the defect seen in carcinoma.

Early biopsy has been advised, even in cases in which only a cardiospasm is suspected. Keen,[4] Janeway[5] and others have urged esophagoscopy, with excision of a small portion of the lesion for pathologic examination.

The foregoing case led to an investigation of cases of carcinoma of the esophagus, and Table 1 was compiled.

TABLE 1.—*Observations in Squamous Cell Carcinoma of Esophagus*

Case	Admission Date	Hemoglobin, per Cent.	Red Blood Cells	Color Index	White Blood Cells	Polymorphonuclears, per Cent.	Lymphocytes, per Cent.	Monocytes, per Cent.
1	8/ 8/21	90	4,600,000	0.93	10,000	82	16	1
2	12/ 9/21	100	5,320 000	0.94	9,500	67	29	4
3	4/25/21	90	4,320,000	0.95	10,800	69	23	8
4	4/22/22	88	5,100 000	0.89	7,500	78	20	2
5	10/ 4/22	85	4,120,000	0.95	6,200	80	14	6
6	10/21/22	75	3,800,000	....	10 000	74	22	3
7	8/29/22	75	4,600,000	0.84	12,800	74	22	4
8	7/25/22	85	.....	....	8,600	55	30	15
9	7/17/22	105	5,500,000	0.89	9,800	60	36	4
10	7/25/22	90	.....	....	.....	..	..	..
11	1/31/23	75	.....	....	.....	..	..	..
12	5/21/23	120	5,500 000	1.15	10,100	78	20	4
13	10/ 8/22	110	6,500 000	0.91	14,100	88	12	..
14	10/ 9/22	85	5,000 000	0.85	12,000	77	11	12
15	3/30/23	100	5,700,000	0.87	6,400	29	29	2
Average.....		93	5,040,000	0.94	9,900	72	22	5

It will be seen that the average blood count was 93 per cent. hemoglobin; 5,040,000 red blood cells; color index, 0.94; 9,900 white blood cells; 72 per cent. polymorphonuclears; 23 per cent. lymphocytes, and 5 monocytes.

The cases cited were strictly carcinoma of the esophagus and did not involve the cardia. The pathologic reports were squamous cell carcinoma.

Table 2 records cases in which adenocarcinoma was found; the patients were signed out as having carcinoma of the esophagus, but the roentgen-ray reports always mentioned incomplete obstruction of the cardia. In other words, the new growths were probably in the cardia rather than completely within the esophagus. I am considering only cases entirely within the esophagus proper.

Here the severe secondary anemia and higher white blood cell count are characteristic of the blood figures in carcinoma of the stomach.

A table of blood counts for carcinoma of the stomach is added for comparison (Table 3).

CASE 45.—*History.*—A man, aged 18, single, was admitted, March 8, 1924, and was discharged, April 26, with a diagnosis of cardiospasm. His chief complaint was dysphagia for one year, markedly increased during the last six weeks. Liquids and solids were swallowed with equal difficulty. There were, however, periods of freedom from this dysphagia. He had lost 40 pounds (18 kg.) in six weeks.

The patient was a tall, thin youth with cold, perspiring hands and female pubic hair distribution. The blood count was 111 per cent. hemoglobin, 4,680,000 erythrocytes, 6,200 leukocytes, 60 per cent. polymorphonuclears, 38 per cent. lymphocytes and 2 per cent. monocytes. A provisional diagnosis of cardiospasm was made. Fluoroscopy revealed a moderate dilatation of the esophagus just above the cardia. A Plummer apparatus was utilized to dilate the region of the

TABLE 2.—*Observations in Cases of Adenocarcinoma of Esophagus*

Case	Admission Date	Age	Sex	Hemoglobin, per Cent.	Red Blood Cells	Color Index	White Blood Cells	Polymorphonuclears, per Cent.	Lymphocytes, per Cent.	Monocytes, per Cent.
16	10/15/19	64	F	42	4,178,000	0.50	11,800	72	28	0
17	9/ 5/22	60	M	65	3,668,000	0.92	24,320	56	43	1
18	11/25/22	65	F	50	4,300,000	0.56	8,200	88	9	3

spasm. An esophagoscopy was performed demonstrating marked dilatation of the esophagus, beginning 8 cm. from the upper end and extending down to the cardia. About 2 cm. above the cardia there was an erosion, 1 cm. in diameter on the left wall. This eroded area did not present any characteristic of a new growth or of a specific or tuberculous ulceration, and may have been the result of previous manipulation. The patient was discharged after several dilations with the Plummer apparatus, and was then able to swallow.

A month after discharge, the patient was readmitted, very sick, with fluid in both pleural cavities, hard lumps in the ribs, small hard nodes in the axillae, and fluid in the abdomen. The boy died in two days. Necropsy revealed a mediastinal sarcomatous growth pressing on the esophagus, with metastatic new growths throughout the body.

SUMMARY

In cancer of the esophagus, the blood count is normal or raised. A high hemoglobin and erythrocyte count, a color index of nearly 1, and a slight leukocytosis are the usual findings. In other words, the normal or high blood count in a neoplasm of the

TABLE 3.—*Blood Counts in Carcinoma of Stomach*

Case	Admission Date	Hemoglobin, Per Cent.	Red Blood Cells	Color Index	White Blood Cells	Polymorphonuclears, per Cent.	Lymphocytes, per Cent.	Monocytes, per Cent.
19	3/15/22	80	4,700 000	0.85	11,800	78	17	5
20	8/ 2/22	69	2,300,000	0.85	11,200	80	10	9
21	11/ 6/22	70	3,730,000	0.95	13,000	78	22	0
22	12/ 2/22	68	.....	....	17,000	73	20	7
23	12/17/22	72	.....	....	14,300	76	22	2
24	9/ 2/23	57	2,980,000	0.99	15 000	..	..	..
25	1/22/23	69	4,970,000	0.89	9,000	71	19	10
26	12/20/23	73	.....	....	10,'00	57	40	3
27	12/20/22	78	3,580,000	1.08	8,800	76	22	2
28	4/26/23	84	.....	....	.....	..	..	..
29	6/15/23	85	.....	....	.....	..	..	..
30	7/23/23	75	.....	....	.....	..	..	..
31	8/13/23	77	.....	....	.....	..	..	..
32	8/ 7/23	89	.....	....	.....	..	..	..
33	11/19/23	95	3,140.000	0.52	8,000	64	34	2
34	1/26/23	89	2,640.000	0.80	12,400	82	15	3
35	2/ 1/23	82	3,320,000	0.81	6,800	79	19	2
36	1/ 3/23	72	.....	....	9.000	79	19	2
37	1/ 2/23	88	.....	....	11,400	82	18	0
38	8/13/23	84	4,300.000	1.02	6,200	78	22	0
39	1/ 5/23	82	3,140 000	0.83	10,000	72	18	10
40	8/10/23	65	2,800,000	0.78	9,000	88	22	0
41	8/23/23	65	3,968,000	0.58	11,000	73	22	5
42	9/ 7/23	57	.....	....	8,800	80	19	1
43	9/15/23	17	1,600,000	0.52	14,000	74	24	2
44	9/ 4/23	73	4,184,000	0.87	20,000	80	8	0
Average.....		80	3,570,000	0.80	11,300	76	21	3

esophagus is the same as in a cardiospasm of functional or inflammatory origin. *A normal blood count therefore does not rule out a new growth of the esophagus.*

In carcinoma of the stomach, a moderate to severe secondary anemia is found. In twenty-six cases of stomach cancer, the average count was 58 per cent. hemoglobin, 3,370,000 red blood cells, color index

4. Keen, W. W.: Surgery, Its Principles and Practice, Philadelphia, W. B. Saunders Company, 3: 180, 1916.
5. Janeway, H. H.: Early Symptomatology of Cancer of the Esophagus, Am. J. M. Sc. 167: 583 (April) 1924.

0.8, 11,300 white blood cells, 76 per cent. polymorphonuclears, 21 per cent. lymphocytes and 3 per cent. monocytes.

The cause of the high blood cell count in the esophageal cancer is probably a concentration of the blood produced by the patient's dysphagia, which prevents him from eating or drinking in comfort.

Carcinoma at or near the cardia is usually adenocarcinoma of the stomach, and usually the blood count is one characteristic of this condition; i. e., a severe secondary anemia.

Primary neoplasm of the esophagus may occur anywhere along the gullet.

1 East One Hundredth Street.

PHYSICAL ALLERGY

PRELIMINARY REPORT *

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In a minority of patients with asthma, hay-fever, urticaria, eczema and other manifestations of allergy, the source of the illness can be traced definitely to contact with some material substance to which the patient is sensitive—substances such as pollen, dander, foods, drugs and vapors. In a majority of cases, however, the primary source of the disorder cannot be found even after a most painstaking effort has been made through the use of history, physical examination, skin tests and clinical tests.

In a previous paper, I [1] described a case of urticaria caused specifically and solely by the action of light; in fact, solely by the rays of light at the violet end of the spectrum. Later I found a case identical to this in every respect except for the fact that the urticarial rash was caused solely and specifically by the action of cold; in fact, best by cold between the temperatures of 5 and 15 C. In each case, the reaction was exactly similar to a number of cases of dermographia in which an urticarial rash could be brought out specifically and solely by mechanical irritation of the skin. At about the same time I observed a case of a different type in which a generalized urticarial rash was brought out specifically and solely by the action of heat; in fact, by heat of any source, including that produced by the application of a hot compress to the skin, the drinking of hot water, the application of a diathermic current, and even by the heat generated by a little exercise or emotional disturbance. It was estimated that during certain periods when the patient was unusually sensitive, the generation of one calory of heat by exercise would cause the rash. The reaction could be prevented or stopped immediately by the application of cold of any source, such as by the exposure of the skin to cold air, or to cold water or ice, by the drinking of cold water, or by the removal of clothing.

These cases were studied exhaustively, and were proved, I believe, to be real examples of allergy closely related to the type classed as pollen disease, food idiosyncrasy and drug idiosyncrasy.

It was very apparent that the reactions produced fell into two distinct classes: first, those in which the reaction was confined to the area directly exposed to the physical agent, and, second, those in which the reaction was widespread, and involved not only the areas directly exposed but distant structures as well. The former type will be spoken of as contact reactions, the latter as reflex-like reactions.

On the basis of knowledge gained from these cases, I have studied the effect of the same physical agents on patients having allergy of obscure origin, involving tissues other than the skin, such as the respiratory tract and the gastro-intestinal tract. I have been astonished in finding that a rather large proportion of patients with asthma, vasomotor coryza, erythema, pruritus, urticaria, angioneurotic edema, eczema and allergic shock are sensitive specifically and solely to the action of a physical agent, such as light, heat, cold or mechanical irritation and, in the case of heat sensitiveness, indirectly to the action of mental or physical exertion, and react invariably with allergic symptoms whenever they are suitably exposed to the physical agent to which they are sensitive. I am fully convinced now that this type of sensitiveness, which I describe under the simple term physical allergy, is a relatively common cause of nasal, bronchial, cutaneous reaction, ordinarily classed as allergy, especially among the class of cases which give negative tests to material agents, such as pollen, epithelium or food.

The effect on hive and asthma patients of changes in temperature and moisture in the air, changes in barometric pressure, and of heat, exercise, emotional disturbances and reflexes, has been noticed and mentioned to me by many patients. The effect of these agencies has been repeatedly mentioned in medical literature. This action, however, has been looked on as a matter of secondary importance, and has been believed to be an inciting cause of reaction due primarily to some other fundamental process. In cases in which the illness has been directly attributed to the action of physical agents, no serious effort has been made to connect this up with allergy. It is interesting in this connection to quote Bostock,[2] who in 1819 described his own case of "summer hay-fever" under the term catarrhus aestivus. He believed that the cause of his illness was heat and the sun's rays, and stated that "by using every means of obtaining fresh air without much exertion, and by carefully avoiding a moist and close atmosphere, the symptoms may in some measure be kept off." He stated also that "during the last summer the patient was so situated as to be able to avoid almost every degree of bodily exertion; he remained nearly confined to the house for about six weeks, and the result was that, notwithstanding the unusual warmth of the season, he experienced much less of the affection than he had done for several years before." It is interesting to repeat that "he was relieved by using every means of obtaining fresh air," a procedure that makes pollen patients worse but which relieves heat sensitive patients, such as I shall describe subsequently. His case harmonizes exactly with a case of urticaria caused by heat which I described under the term urticaria calorica, with the exception of the fact that the skin was involved instead of the nasal mucous membrane.

For the last six months, patients presenting symptoms such as hay-fever, asthma, urticaria, angioneurotic edema and eczema have been tested not only for specific sensitiveness to material substances, such as pollen,

* Read before the Southern Medical Association, New Orleans, Nov. 26, 1924.

1. Duke, W. W.: Urticaria Caused Specifically by the Action of Physical Agents, J. A. M. A. 83:3 (July 5) 1924.

2. Bostock, J.: Case of Periodical Affection of the Eyes and Chest, M.-Chir. Tr., London 2@:161, 1819 (cited by Koessler, K. K.: The Specific Treatment of Hay-Fever (Pollen Disease), in Forchheimer's Therapeusis of Internal Diseases, New York, D. Appleton & Co. 6:671-706, 1914.

epithelium and food, including intracutaneous tests with some 350 foreign substances, but have also been systematically tested with physical agents, such as ice applied to the skin generally and locally, cold baths, refrigerated air at 37 and 20 F., hot applications, hot baths, dry heated air, moist heated air, and heat applied through the use of an autocondensation current, sunlight and actinic ray, physical exercise while exposed to the foregoing agents, and changes in air pressure. These tests were carried out both on pollen sensitive patients and on patients who were apparently insensitive to material substances, and were accomplished through the cooperation of Mr. Fred Wolferman of the Wolferman Grocery Company, Mr. H. Wartel of the Oak Street Baths, and Dr. O. J. Cunningham, who, by means of a large tank, can expose patients to different degrees of air pressure analogous to increases in barometric pressure.

Through this study I have been forced to look on allergy from a totally different point of view than formerly, and believe that many of the so-called nonsensitive cases must be classed as a fifth type of allergy, namely, physical allergy, and that in this type there are at least two different classes of reaction; namely, the contact or local type, and the reflex-like type.

TYPES OF CASES

It is not possible in a paper of this scope to give a detailed description of the cases on which the study is based. Suffice it to say that the cases to be referred to were studied in the same detail as those reported before.[1] The following different types were observed:

Light Sensitiveness.—Urticaria, characterized by erythema, itching, and edema of the skin, in one case was brought out locally by two and one-half minutes' exposure to blue light of any source, including arc light, the light of a nitrogen lamp, sunlight, and the light of a mercury vapor quartz lamp. In another case, scaly eczema was caused specifically and solely by several hours' exposure to the sun's rays. In this case, the reaction was delayed, appearing usually not sooner than several hours after the exposure, but lasting for several days. In two cases, nasal allergy was caused by exposure to the sun's rays, in one of them by the effect of sunlight on the retina. In the latter case, sneezing and swelling of the mucous membrane of the nose would appear invariably if the patient looked at the sun for several seconds. Reaction of lesser severity could be brought out by looking at a nitrogen lamp. It could not be brought out, however, by looking a few moments at a mercury vapor quartz light. There are, therefore, two types of sensitiveness to light, the contact type of reaction and the reflex-like type.

Heat Sensitiveness.—Heat sensitiveness was the commonest type of physical allergy observed. The symptoms produced were varied, and included erythema, pruritus, superficial urticaria, giant urticaria, and angioneurotic edema of the deeper structures, generalized dermatitis, nasal allergy, bronchial asthma and, in one case, diarrhea. Reactions were both immediate and delayed. Symptoms were produced in every instance by heat of any source—the heat of a nitrogen lamp, by hot water applied to the skin, by hot drinks, by the diathermic current, and, in the more highly sensitive patients, by the effect of both mental and physical exertion. In the case of immediate reactions, symptoms could be prevented or stopped immediately by the application of cold, however applied. In cases of this sort, the temperature was commonly subnormal. In two cases, it was not uncommon to find an early morning temperature as low as 94 F., with an afternoon temperature rarely exceeding 97. In these two cases, sensitiveness was greatest when the body temperature was lowest, and reaction was invariably associated with a rise of temperature of one-fifth degree or more. As temperature approached normal, reactions were difficult to elicit. In one case, when the morning temperature was unusually low the patient would react with hives as many as twenty-five times a day. He was entirely free of symptoms once during the course of an infectious disease in which his temperature was constantly above normal. During sensitive periods, an urticarial rash could be brought out by the slightest amount of physical or mental exertion, even by the effort of putting on a coat or walking up steps, or even turning over in bed, or by the mental activity caused by an argument, or the watching of an athletic contest. An interesting business deal was frequently interrupted by an attack of hives that would cause the patient to scratch vigorously for ten minutes or more. Reactions of this sort could invariably be stopped by cooling the body by means of an electric fan, by the removal of clothing, or by rubbing the hands with ice, or washing the hands in cold water.

In a case of nasal reaction of a similar character, an attack of sneezing, with swelling of the mucous membrane of the nose, was produced by heat of any source, and even by the heat generated by the physical exertion caused by turning over in bed quickly. Such a reaction could be stopped by exposing the bare arm to cold air.

In a case of bronchial asthma of similar origin, a severe attack could be brought on by the application of a hot compress to the skin for one minute, or by the heat of a nitrogen lamp, or by the physical exertion of going up several steps rapidly, or riding a bicycle up a small hill. Such attacks could be stopped within one minute by rubbing the skin with ice, or by a cold bath.

In a case of generalized dermatitis, and in several cases of giant urticaria and angioneurotic edema, the reaction was delayed, and occurred only after exposure to relatively large amounts of heat. In this case, relief did not appear immediately after the application of cold, but reactions could be prevented by careful regulation of temperature.

In one case, an attack of diarrhea in which a patient would have as many as twenty stools during one hour could be brought on almost immediately by the ingestion of a hot drink or by hot foods. This illness of many years' duration was greatly relieved by the careful avoidance of unusual heat.

Except for a patient who had hives at the site of burns, the heat sensitive cases all gave reflex-like reactions.

Sensitiveness to Cold.—Sensitiveness to cold is less common than sensitiveness to heat. The history is much the same, except that the reaction is caused by cold instead of by heat, and is relieved instead of caused by physical exertion. The cases observed included two of urticaria caused locally by the application of cold to the skin, and one of a generalized rash caused by cold, however applied. Conjunctival reactions, nasal reactions, cough and bronchial reactions were caused in two cases by exposure of the face to a cold wind. In one case, complete stoppage of the nose could be caused by such slight exposure to cold as follows removal of the clothing, or by exposing the

arms to the cold air at night, or by the drinking of a cold glass of water. The discomfort caused by this illness in one case necessitated the patient's remaining out of school for months.

In one case, severe bronchial asthma followed exposure to cold of marked grade, such as the rubbing of the skin with ice, by the wearing of too little clothing in cold weather, and by rapid changes in temperature from warm to cold. In this patient, the attack could be relieved immediately by the application of a hot compress to the skin or by physical exertion. This is worthy of emphasis, since exercise in most cases of asthma makes symptoms worse instead of better. In this case, however, marked exercise invariably gave complete relief.

One cold sensitive patient gave a history of abdominal pain so severe that a diagnosis of gallbladder colic was made and an operation advised. It was found almost by accident that the patient was cold sensitive and that the so-called gallbladder attacks could be brought on at will by the ingestion of cold water or by cold foods, and could be relieved invariably by a hot drink.

The reactions caused by cold were both of the contact and reflex-like type.

Sensitiveness to Mechanical Irritation.—This condition is so common as to warrant a little comment. The illness is characterized by erythema and urticaria, which follows mechanical irritation of the skin, however produced. In some cases the sensitiveness is so marked that a slight slap will leave the imprint of the hand in relief. In one case the reaction was delayed, the itching and edema of which the patient complained so bitterly appearing in not less than one hour after the application of the irritating agent.

The scratch reactions (dermographia) were apparently all of the contact type.

The question that now arises is whether or not physical allergy as here described is the same type of illness as allergy caused by hypersensitiveness to material substances, such as pollen, dander, foods or drugs. The following points of similarity, discussed at length in a previous paper, apply best to the contact type of reaction. The reflex-like type is too complex for consideration in this paper.

1. The family history is the same; namely, in each a family history of hay-fever, asthma or hives can usually be obtained. Parent and offspring are not often sensitive to the same agent in either instance, and furthermore, parents of patients sensitive to physical agents are more often sensitive to pollen or other material substances than to physical agents.

2. Reactions are brought out specifically and only by certain specific agents.

3. The skin is exhausted locally by reaction so that further application of the irritating agent causes no further reaction.

4. Local tolerance follows repeated local exposure.

5. Symptoms of general reaction, such as collapse and eosinophilia, follow extreme exposures.

6. A certain grade of general tolerance can be obtained through repeated exposure to the agent responsible for the illness. This is not so marked or constant a result in the case of physical allergy, however, as it is in the case of pollen allergy. This may be because a high dose cannot be administered so easily in the physical type of case.

Physical allergy differs strikingly from pollen allergy in the absence of pseudopod formation in skin areas tested with physical agents. This is, of course, a striking feature of sensitive cases tested with pollen.

In a previous paper, several possible explanations of skin sensitiveness caused by the application of physical agents were given at some length and need not be repeated here. One explanation, which seems to me to be logical, was based on an assumption that patients with allergic tendencies might become specifically hypersensitive to some new body formed in the tissues solely under the influence of one specific physical agent, such as certain rays of light or heat or cold of certain specific grades, or possibly other analogous physical agencies. We know that heat, cold and light can each cause an aggregation of protein molecules and chemical changes in proteins in vitro. I am not wandering far from the realm of either fact or theory in assuming that this, under certain circumstances, takes place in vivo, and that some patients with allergic tendencies might actually become specifically hypersensitive to a new body formed in this way. If patients can become sensitive and be made ill by the minute quantity of certain specific pollens in the air at certain seasons, they surely could become sensitive to and be made ill by some unusual substance formed in the tissues under the influence of a physical agent.

One additional possibility must be mentioned and taken into consideration seriously. It was shown in 1910 by Barger and Dale,[3] and in 1912 by Allan Eustis,[4] that a protein split product, histamin, if injected subcutaneously into animals, produced bronchial constriction very similar to that found in animals dying in anaphylactic shock, and by Eustis [5] that if applied to the skin of human beings in a 1:1,000 solution, would give rise to a typical hive. This finding has been verified by other observers. It seems quite possible that in sensitive persons under certain circumstances, the action of physical agents might break down certain protein molecules with the liberation of a histamin-like body, and that this could produce some of the clinical symptoms described in this paper. This view seems particularly applicable to contact reactions of the skin that are characterized, like histamin reactions, by the failure of pseudopods to extend out beyond the skin areas directly affected.

In a few cases of physical allergy the patients were sensitive to one or more material substances, such as pollen, epithelium or food. This, however, was the exception. Conversely, pollen or hair sensitive patients were not often found sensitive to the action of a physical agent. At this finding I was surprised. It is contrary to a view that I had held previously that allergy of any source was frequently influenced by physical agents.

Patients are rarely sensitive to more than one physical agent, except in the case of urticaria dermographica, and in each of five cases these were affected by freezing the skin with ethyl chlorid.

The gross exception to all rules was a wool asthma patient, who also had urticaria dermographica and reacted markedly to cold with severe asthma.

The reactions produced by physical agents were usually prominent in one locality, such as the skin, the nasal mucous membrane or the bronchial tree. However, as a rule, localities other than the favored ones

3. Barger and Dale: J. Physiol. 41:19, 494, 1910.
4. Eustis, Allan: Further Evidence in Support of the Toxic Pathogenesis of Bronchial Asthma, Based on Experimental Research, Am. J. M. Sc. 143:862 (June) 1912.
5. Eustis, Allan: Urticaria—An Experimental Lesion Produced by the Local Application of Betaimidazolylethylamin: Its Relation to Intestinal Toxemia, New Orleans M. & S. J. 66:730 (April) 1914.

often reacted when suitably exposed. For example, in skin cases which reacted to cold, coryza, cough and asthma would often follow exposure to refrigerated air.

TYPES OF REACTION

The reactions observed were, grossly, of four important types. Two of these types were described in the skin cases previously reported.

1. The local or contact type of reaction. In these, the reaction is confined to tissues directly exposed to the physical agent.

2. Shock reactions. This is likely to appear in contact cases when large surfaces are exposed.

3. Reflex-like or diffuse reactions. In this type, not only is the area exposed affected but distant structures as well. Frequently, distant structures alone are affected. As an example may be mentioned asthma as a result of exposure of the skin to cold. These reactions in many ways resemble a reflex. I am sure, however, that the reaction has an underlying pathogenesis much more complex than a simple reflex.

4. Solitary reactions. In a number of skin cases, reactions were confined to one or several small localities when exposure was too slight to cause a widespread reaction. A widespread reaction was obtained in each case of this sort when the exposure was more intense. As examples of solitary reactions, I may mention a patient sensitive to sunlight, who, following slight exposure of the right arm to light (fifteen seconds of summer sunlight), would show several hives, which would appear within a few seconds. Hives brought out in this way invariably had the same locality and shape. After more prolonged exposure of the same areas (three minutes), a large hive would appear covering the entire area exposed to light. A reaction of similar nature made its appearance in another patient in the form of several hives on the chest whenever she was exposed to heat, physical exercise or emotional disturbance. This reaction could be prevented or relieved by the application of cold. A reaction of a similar nature appeared in another patient near the insertion of the deltoid muscle whenever arsphenamin was administered. This patient did not react in other areas at any time.

Solitary reactions of this sort might be explained possibly by assuming that certain tissue elements hypertrophy through frequent reactions due to frequent exposure, so that slight exposure thereafter produces a marked effect. Huber and Koessler[6] demonstrated marked hypertrophy of the muscles of the bronchial tree in patients subject to chronic asthma. Similar hypertrophy might easily occur in areas other than the bronchial tree after frequent and prolonged stimulation, and give rise to intensified reactions at those particular points.

Solitary reactions on the skin are of little practical import. I believe that solitary reactions of a similar nature occur, however, in other localities and might be of great importance. A solitary reaction in the bronchial structure, for example, might cause a high grade of obstruction and might manifest itself after very slight exposure to an agent that caused the reaction.

The history in heat or cold sensitive patients is frequently misleading, for the reaction is frequently caused and intensified by a change in temperature rather than by exposure to a temperature of any specific degree. For example, one heat-sensitive patient had nasal reaction apparently only after exposure to cold. Examination revealed that reactions were relieved instead of caused by cold. In this case, severe nasal reaction could be brought out invariably by heat and could be relieved subsequently by cold. If she was placed in a refrigerator, she would be comfortable. On subsequent exposure to ordinary air, she would react violently. It could be easily proved that the change from cold to heat gave rise to her symptoms, and that when she was cold the reaction could be brought out by very little heat. She gave, therefore, the misleading history of allergy after exposure to cold.

Occasionally, the history in heat sensitive cases is extremely misleading. In two instances, patients gave a history of vasomotor rhinitis on exposure to slight grades of cold. They almost invariably had attacks on removing their clothing before going to bed and on rising in the morning, and after stepping out of a warm house into cold air or on taking a cold bath. Each of these patients, when tested with cold air, reacted slightly or not at all on exposure to cold while clad. Cold air, instead of causing attacks, would relieve them. It was later discovered that an attack could be brought on within five minutes invariably if a hot compress was applied over the nose. If, at the same time, ice was applied to the skin, the attack would come on within thirty seconds. The attack could be relieved within one minute by the application of ice to the nose, especially if the body was warmed. These experiments were repeated and confirmed without leaving chance for error. It was evident that the attacks noticed on ordinary exposure to cold were due to a difference between the temperature of the body surface and the temperature of some mechanism in the nose. A case of this sort must really be classed a heat sensitive case, even though the symptoms are apparently caused by cold.

SUMMARY AND CONCLUSIONS

1. The symptoms bronchial asthma, vasomotor rhinitis and conjunctivitis, photophobia, abdominal pain, erythema, pruritus, urticaria, angioneurotic edema, eczema and shock can be caused in some patients specifically and solely by the action of a physical agent, such as light, heat, cold, mechanical irritation, freezing and burns and, in the case of heat sensitiveness, indirectly by mental and physical exertion.

2. As a rule, symptoms are caused specifically by one physical agent only, although occasionally by two or more.

3. Patients sensitive to material substances, such as pollen, animal hair and food, rarely react specifically to the action of physical agents, and vice versa.

4. The condition seems the commonest single cause of the symptoms mentioned in the group of cases which give negative skin tests to pollen, animal hair and other material substances.

5. Heat and cold are the more common causes of reaction and, of these, heat is a more common cause than cold.

6. For this type of disease, the name "physical allergy" (allergy caused by physical agencies) is used. It is not assumed, however, that physical allergy is identically the same disease as allergy caused by material substances, such as pollen and animal hair, although it is believed that they are closely related.

7. Four important types of reaction were observed: first, local or contact reactions, confined to the area directly exposed to the physical agent; second, shock

6. Huber, H. L., and Koessler, K. K.: The Pathology of Bronchial Asthma, Arch. Int. Med. 30:689 (Dec.) 1922.

reactions when large areas of skin were exposed in contact cases; third, reflex-like reactions which might involve the areas directly exposed and distant structures as well, and fourth, solitary reactions.

8. Several possible explanations for the condition might be offered. One which seems likely is based on an assumption that patients with allergic tendencies might become specifically hypersensitive to some new body formed in the tissues solely under the influence of one physical agent. Another explanation worthy of consideration is based on an assumption that under certain abnormal conditions a protein molecule might be broken down under the influence of a physical agent, with the liberation of a histamin-like body, and that this causes the reaction.

9. Testing with the physical agents mentioned and treatment carried out along logical lines with physical agents are useful in the specific diagnosis and specific treatment of the allergic symptoms mentioned.

Federal Reserve Bank Building.

THE SIGNIFICANCE OF THE BASAL METABOLISM DETERMINATION

A SUMMARY OF THE RESULTS OF FIVE HUNDRED DETERMINATIONS ON FOUR HUNDRED AND THIRTY-SEVEN OFFICE PATIENTS

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In 1922, two large series of basal metabolism determinations were reported. The first was that of Means and Burgess,[1] who published the results of 1,000 cases observed at the Massachusetts General Hospital between the years 1914 and 1921. The second, that of Boothby and Sandiford,[2] comprised 8,614 subjects studied at the Mayo Clinic from 1917 to 1922. Some of the patients in the foregoing series were ward or private patients resident in the hospital at the time of the test, although many of them were outpatients. The present study concerns itself with the results obtained with private patients, who came to the office from their home the morning of the metabolism determination, comprising in all 500 determinations on 437 subjects between the years 1921 and 1924. These were in part our patients and in part patients referred by other physicians.

It was thought that a report of the data obtained might be of interest from several points of view. In the first place, it seems pertinent to inquire into the value of this test from the standpoint of the practice of clinical medicine. Numerous reports have been made in which thyroid disorders have been studied as a part of a routine investigation. In this study, the determination of the basal metabolism was usually performed for the purpose of acquiring diagnostic or prognostic aid. Although it is realized that these points of view are interlaced, the material here obtained is presented more to determine the significance of the test in the practice of medicine than to elucidate problems in thyroid physiology.

In the second place, the question has been raised as to whether this test is subject to any modification in interpretation when performed in the office on ambulatory patients, in comparison with the test as performed in the hospital, where patients are transported without previous walking exposure to variations in weather, or change in clothing. Of course, dispensary patients who walk to the hospital would fall into the group now reported. McCann,[3] in his recent review of the subject of calorimetry, has stated that whereas the normal zone of metabolism of ± 10 per cent. of the average (total variation 20 per cent.) seems justifiable with hospital patients, with patients who are ambulatory it is better to extend this to the limits of ± 15 per cent., allowing a maximum variation of 30 per cent. between the highest and lowest normal metabolism. It must be acknowledged that variations in weather conditions, clothing and previous physical exertion have a definite influence on heat production, such environmental factors having been fully considered by Lusk.[4] With this in mind, it would seem to be of some interest to compare a group derived solely from ambulatory patients with those previously reported, and to consider from the combined evidence what is the most suitable zone of normal metabolism.

METHODS

We have calculated the heat production in this study by measuring the oxygen consumption alone, assuming a respiratory quotient of 0.82. The Benedict apparatus was used throughout, the original portable type in the first half of the cases and the Roth modification of the Benedict in the latter half. It is our belief that for determinations on untrained subjects, done for the first time, a metabolism determination on a Benedict apparatus, in which oxygen consumption alone is measured, is as satisfactory as a determination on a Tisso apparatus, in which both gases are measured, provided we exclude patients with diabetes and those undergoing continued fasting. The assumption of a respiratory quotient of 0.82 involves an error in the total metabolism that is rarely above 1 or 2 per cent. Let us consider two cases and determine the maximum error theoretically possible at the extremes of the respiratory quotients. A man, aged 43, surface area, 1.85 square meters, has a basal metabolism of + 7.3 per cent. at a respiratory quotient of 0.82; + 4.2 per cent. at a respiratory quotient of 0.71, and + 11.2 per cent. at a quotient of 1.00, a difference of 3.1 per cent. when 0.71 is assumed, and 3.9 per cent. at 1.00. In the second example, a girl, aged 20, surface area 1.48 square meters, has a basal metabolism of — 11.2 at 0.82; — 7.8 at 1.00, and — 13.7 per cent. at 0.71, a difference of 2.5 per cent. at 0.71 and 3.4 at 1.00. Thus, the maximum theoretical errors are between 2 and 4 per cent., depending on the type of individual. It is obvious, however, that nonprotein respiratory quotients are not encountered at 0.71 or 1.00 under basal conditions, unless in the presence of nutritional diseases such as diabetes, and furthermore, that quotients are much more apt to be at 0.82 than at either extreme in routine clinical disease for which this apparatus is intended. An error of from 1 to 2

1. Means, J. H., and Burgess, H. W.: The Basal Metabolism in Nontoxic Goiter and in Borderline Thyroid Cases, with Particular Reference to Its Bearing in Differential Diagnosis, Arch. Int. Med. 30: 507 (Oct.) 1922.

2. Boothby, W. M., and Sandiford, Irene: Summary of the Basal Metabolism Data on 8,614 Subjects, with Especial Reference to the Normal Standards for the Estimation of the Basal Metabolism Rate, J. Biol. Chem. 54: 783 (Dec.) 1922.

3. McCann, W. S.: Calorimetry in Medicine, Medicine. 3: 1 (Feb.) 1924.

4. Lusk, Graham: The Science of Nutrition, Ed. 3, Philadelphia, W. B. Saunders Company, 1917.

per cent. of the total metabolism from this source is freely admitted to occur.

It must be pointed out, however, that respiratory quotients, as determined for the first time on untrained subjects by the open circuit method, involving as it does the application of a face mask, are no more reliable than an assumed quotient of 0.82. It is well known that overventilation of the lungs will result in an excretion of carbon dioxid at a rate enormously greater than the actual production of the gas by the oxidations of the body, an occurrence that will give a completely erroneous respiratory quotient. In our own experience and in the experience of men who have used the Tisso predominantly, we have frequently seen quotients of 0.71 and 1.00, in which it was obvious that the metabolism would be more accurately figured on the basis of an assumed quotient of 0.82 than on that actually obtained. This criticism does not apply when repeated determinations are performed and the patient is taught to breathe naturally. Under these circumstances, respiratory quotients may be obtained with great accuracy. But in routine calorimetry for the determination of abnormalities of thyroid function, where in most instances one determination is performed, the use of the oxygen consumption as measured in the Benedict apparatus, with an assumed respiratory quotient of 0.82, secures an accuracy quite comparable to that when both oxygen and carbon dioxid are measured and the respiratory quotient calculated therefrom.

TABLE 1.—*Summary of Basal Metabolism on Four Hundred and Thirty-Seven Subjects*

Diagnosis	No. of Cases	Basal Metabolism, Number of Cases in Each Group							Basal Metabolism, per Cent. in Each Group	
		+10 to −10	+11 to +15	−11 to −15	+16 to +20	−16 to −20	Above +20	Below −20	+10 to −10	+15 to −15
Endocrine disease	101	31	2	14	2	13	23	16	31	47
Nervous disease	89	74	6	5	1	1	..	..	83	90
Obesity	62	47	3	10	..	2	..	..	75	95
Miscellaneous diseases	184	134	19	26	1	..	2	2	73	97
Total	437	286	31	55	4	17	25	19	65	85

the postabsorptive condition, from twelve to fourteen hours after food, and after a preliminary rest period of at least thirty minutes.

RESULTS

In Table 1 are correlated the data on the 437 subjects studied, divided into four major groups. Of the 101 patients who had an endocrine disorder of one kind or another, only 31 per cent. had a metabolism within the so-called normal range of ± 10 per cent., and 47 per cent., of ± 15 per cent. Of the 335 who remained, including those with nervous diseases, obesity and miscellaneous ailments, 76 per cent. were within the ± 10 range, and 97 per cent. within ± 15. If we include in the miscellaneous group those endocrine disorders in which the thyroid is presumably not involved, 76 per cent. are still within ± 10, and 97 per cent. within ± 15. Of the 8,614 determinations recorded by Boothby and Sandiford,[3] 2,417 were in patients who did not have thyroid disease. Of this group, 77 per cent. were within the ± 10 range, and 90 per cent. were within ± 15. Our results, then, corroborate the fact that disturbances in basal metabolism are primarily effected by the thyroid gland, that the majority of patients with diseases other than the thyroid, i. e., 76 per cent., are within the so-called normal zone of ± 10, and that it is not until the zone is extended to ± 15 that more than 90 per cent. of this miscellaneous control group is included. Comparison of the individual groups shows an interesting parallelism.

TABLE 2.—*Basal Metabolism in Nervous Diseases, in Eighty-Nine Subjects*

Diagnosis	No. of Cases	Basal Metabolism, Number of Cases in Each Group							Basal Metabolism, per Cent. in Each Group	
		+10 to −10	+11 to +15	−11 to −15	+16 to +20	−16 to −20	Above +20	Below −20	+10 to −10	+15 to −15
Anxiety neurosis	54	49	5	2	1	..	..	..	91	98
Neurasthenia	22	19	..	3	..	1	..	..	86	95
Manic depressive insanity	9	6	3	..	..	..	..	..	67	100
Dementia praecox	3	3	..	..	..	..	..	..	100	100
Total	89	74	8	5	1	1	..	..	83	98

In discussing errors in basal metabolism determinations of a magnitude of 1 or 2 per cent., it should be borne in mind that their clinical significance is minimal. The day to day variations in basal metabolism in the same individuals are apt to overshadow these relatively small differences. Although a remarkable constancy has been obtained on trained subjects (Lindhard,[5] Zuntz and Loewys[6]), most workers emphasize the variability of the test on average persons. Thus, Benedict[7] found an average variation of 13.9 per cent., and Blunt and Dye,[8] 13.2 per cent. In the report of the latter authors, the greatest difference between maximal and minimal basal metabolism on the same subjects was 28.8 per cent., and the lowest, 7.4 per cent. Other authors report similar variations, so that it might be better to think of a basal metabolism reading of, let us say, + 5 per cent. as + 5 per cent. ± 5 per cent., instead of strictly + 5 per cent. Just as there are day to day variations of a certain magnitude in all physical and chemical bodily constants, there are variations in heat production which, however, eclipse the errors in method.

The Du Bois standards were used throughout, conforming to the usage of Means and Burgess and of Boothby and Sandiford. All subjects were studied in

5. Lindhard, J.: The Seasonal Periodicity in Respiration, Skandin. Arch. f. Physiol. **20**: 220-214, 1912.
6. Zuntz and Loewys, quoted from Lusk, Graham: The Physiological Effect of Undernutrition, Physiol. Rev. **1**: 523 (Oct.) 1921.
7. Benedict, F. G.: Factors Affecting Basal Metabolism, J. Biol. Chem. **20**: 263, 1915.
8. Blunt, K., and Dye, M.: J. Biol. Chem. **47**: 69 (June) 1921.

NERVOUS DISEASE

In Table 2, the data on eighty-nine patients with nervous ailments are presented. Eighty-three per cent. were within the ± 10 range; 98 per cent., within ± 15. There are twenty-three patients with cases of neurasthenia, 83 per cent. of whom were within ± 10, and 96 per cent. within ± 15. Of 384 cases of neurasthenia reported by Boothby, 84 per cent. were within ± 10, and 97 per cent. within ± 15. In our series, there were fifty-four cases of anxiety neurosis, in 85 per cent. of which the basal metabolism was within ± 10, and 98 per cent. within ± 15. Boothby reported 95 per cent. within ± 15. The three patients who were beyond the latter range were within from — 15 to — 20 per cent. of the normal. Magnus-Levy [10] found the basal metabolism in fourteen cases of obesity unchanged in comparison with that of control subjects not overweight. In 1916, Means [11] published observations to show that the basal metabolism in obesity was essentially normal. He reported five cases in which the subjects were more than 60 per cent. overweight, and seven between 30 and 60 per cent. overweight. Of these, nine of the twelve readings were within ± 10, and three between — 10 and — 16. The three patients with low metabolism presented some evidence of hypopituitarism. Boothby and Sandiford reported, in the series already referred to, ninety-four cases of obesity, in which 80 per cent. were within ± 10, and 94 per cent. within ± 15. Of the patients not in the latter group, one was between + 16 and + 20, three were between — 16 and — 20, and one below — 20. Strouse, Wang and Dye [12] recently found no significant change in basal metabolism in seventeen overweight subjects.

It appears that in obesity also the majority of patients fall within the ± 10 per cent. of the average; i. e., between 75 and 80 per cent. of all cases, and that 95 per cent. are within ± 15. Those patients, however, who do not fall within ± 15 show a tendency to be below normal rather than above. Our results add confirmation to the view that the cause of simple obesity is not to be found in the thyroid gland. In fact, the exceptional cases in which a lowered metabolism is found may be instances of hypopituitarism. The differential diagnosis between excessive obesity and hypopituitarism is not always an easy one. The clear-cut examples of hypopituitarism may show a diminished

TABLE 3.—*Basal Metabolism Data in Obesity in Sixty-Three Subjects*

Percentage Increase of Weight Above Normal *	No. of Cases	Basal Metabolism, Number of Cases in Each Group					Basal Metabolism, per Cent. in Each Group	
		+10 to −10	+10 to +15	−10 to −15	+15 to +20	−15 to −20	+15 to −15	+10 to −10
From +15 to +35	41	39	1	0	..	2	95	73
From +36 to +50	16	11	2	1	..	..	93	79
From +51 to +90 †	7	5	..	1	..	1	86	71
+110	1	1	..	..	..	..	100	100
Total	63	47	3	10	..	3	95	75

* Normal standards were taken from Metropolitan Life Insurance Company.
† Average weight of the seven subjects was from 51 to 90 per cent. above normal, and the one 110 per cent. above normal was 252 pounds (114 kg.).

ninety-nine cases of cardiac neurosis, in which the basal metabolism in 84 per cent. was within ± 10, and 96 per cent. within ± 15.

In this group of nervous diseases, no cases were found above or below 20 per cent. of the normal. There is a general tendency of the patients with anxiety neurosis to have a basal metabolism reading a little higher than those with neurasthenia, indicating perhaps the excitable temperament of the former as opposed to the fatigue or exhaustion aspect of the latter. In nine cases of manic-depressive insanity, readings were within ± 15, of which three were between + 10 and + 15. Three patients with dementia praecox had readings within ± 10. These results are in general accord with

TABLE 4.—*Basal Metabolism in Miscellaneous Diseases in One Hundred and Eighty-Four Subjects*

Diagnosis	No. of Cases	Basal Metabolism, Number of Cases in Each Group							Basal Metabolism, per Cent. in Each Group	
		+10 to −10	+11 to +15	−11 to −15	+16 to +20	−16 to −20	Above +20	Below −20	+10 to −10	+15 to −15
Diabetes mellitus	20	14	4	2	..	..	..	..	70	100
Hypertension	16	14	1	1	..	..	..	..	87	100
Epilepsy	9	7	..	2	..	..	..	..	78	100
Chronic arthritis	9	4	2	2	..	1	..	..	80	100
Chronic cardiac disease	2	1	..	..	..	..	1	..	50	50
Epidemic encephalitis	2	1	..	..	..	..	1	..	50	50
Undernutrition *	5	1	1	1	..	..	..	2	20	60
Unclassified	121	92	10	18	1	..	..	..	76	90
Total	184	134	18	26	1	1	2	2	73	97

* Of the two cases below −20, one patient had epilepsy and one diabetes mellitus. Both are classified as undernutrition, as this was the more striking disorder.

the larger series of Gibbs and Lemcke,[9] although these authors found some definitely abnormal rates in the acute phase of these psychoses.

OBESITY

In Table 3, the data on sixty-three subjects with obesity is presented. They are divided into groups according to their percentage overweight, the standards of the Metropolitan Life Insurance Company having been used for this purpose. The average of all groups shows 75 per cent. within the ± 10 range, and

9. Gibbs, C. E., and Lemcke, D. A.: Study of the Basal Metabolism in Dementia Praecox and Manic Depressive Psychoses, Arch. Int. Med. 31: 102 (Jan.) 1923.

10. Magnus-Levy, A.: Untersuchungen zur Schilddrüsenfrage, Ztschr. f. klin. Med. 31: 269, 1897. Der Einfluss von Krankheiten auf den Energiewechsel im Ruhezustand, ibid. 60: 177, 1906.

11. Means, J. H.: The Basal Metabolism in Obesity, Arch. Int. Med. 17: 263 (May) 1916.

12. Strouse, S.; Wang, C. C., and Dye, M.: Studies on Metabolism of Obesity, Arch. Int. Med. 34: 275 (Sept.) 1924.

heat production, as will be brought out shortly. Experimental removal of the pituitary gland in dogs is followed by diminution in metabolism. A finding of a lowered basal metabolism in a patient excessively overweight would thus tend to support hypopituitarism rather than simple obesity, although the present state of our knowledge is insufficient to establish this point. In our series, the patient most overweight, 110 per cent. above the standard, had a metabolism of ± 10. Of the three patients who had a metabolism between — 15 and — 20, one occurred out of seven patients who were from 51 to 90 per cent. above their standard weight, and two occurred in forty-one patients from 15 to 35 per cent. overweight. The degree of obesity bore no relation to the heat production, an additional reason for believing the thyroid gland essentially uninvolved.

MISCELLANEOUS DISEASES

Excluding endocrine disorders, nervous disease and obesity, we have left 184 cases, the data of which are summarized in Table 4. Seventy-three per cent. of all patients had a metabolism within ± 10, and 97 per cent. within ± 15. In 2,417 determinations on patients who had no evidence of thyroid disease. Boothby and Sandiford reported 77 per cent. within ± 10, and 90 per cent. within + 15. In their series, pernicious anemia and leukemia were included, accounting for a smaller percentage within ± 15 than our group.

One hundred and twenty-one of our cases are grouped as unclassified. Many of these patients undoubtedly suffered from functional disorders not sufficiently pronounced to justify a label. Others were undiagnosed either by us or by physicians who referred them, or could not be followed a sufficient length of time. Seventy-six per cent. were within ± 10, and 99 per cent. within ± 15. In diabetes mellitus, hypertension, epilepsy and chronic arthritis, we found no significant variation in heat production, confirming previous work in these conditions.[13] In chronic arthritis, more marked differences have been described, particularly a tendency toward a lowered heat production.[14] In nine cases here reported, one was between — 16 and — 20, two were between — 11 and — 15, and two were between + 11 and + 16.

There were four cases of the total group of 184 in which the basal metabolism was beyond ± 20: (1) undernutrition in a case of epilepsy, below — 20; (2) undernutrition in a case of diabetes, below — 20; (3) chronic heart disease with beginning decompensation, above + 20, and (4) epidemic (lethargic) encephalitis with tremor of extremities, above + 20. It has been shown[15] that undernutrition and cardiac insufficiency[16] may be associated with disturbances in heat production in the direction indicated by the foregoing results, and do not therefore indicate disturbances in thyroid function. Gross tremor of the extremities was undoubtedly the cause of the elevated metabolism in the case of epidemic encephalitis.

ENDOCRINE DISORDERS

The data on the basal metabolism of 101 subjects having endocrine disorders is recorded in Table 5. Of twenty-four cases of exophthalmic goiter, four were in remission as a result either of previous operation or of medical treatment. The sixteen remaining patients had a metabolism above + 20 per cent. In three cases of adenoma with hyperthyroidism, the metabolism was above + 20 per cent. Of eleven cases of colloid or simple goiter, nine patients had a basal metabolism of ± 10, and two of from — 11 to — 15. Of ten cases of hypopituitarism, seven patients were within the ± 10 range, and three were between — 11 and — 16. The occasional tendency of both colloid goiter and hypopituitarism to cause a slight subnormal heat production has been noted previously, although the results in our cases are all within the ± 15 range. Of nine cases of adenoma without toxic symptoms, seven patients were within ± 10, and all within ± 15 per cent.

There were twenty-seven cases of hypothyroidism and twelve cases of questionable hypothyroidism. The latter group showed a tendency toward a subnormal heat production without a satisfactory clinical history or follow up, and may for our present purposes be

TABLE 5.—*Basal Metabolism in Endocrine Disorders in One Hundred and One Subjects*

Diagnosis	No. of Cases	Basal Metabolism, Number of Cases in Each Group: +10 to −10	+11 to +15	−11 to −15	+16 to +20	−16 to −20	Above +20	Below −20	Basal Metabolism, per Cent. in Each Group: +10 to −10	+15 to −15	Aid in: Diagnosis	Treatment	Comment
Exophthalmic goiter	24	1	1	1	1	..	20	..	4	8	11	16	Four cases were in remission, two cases as a result of operation
Adenoma with hyperthyroidism	3	..	..	..	..	..	3	..	0	0	1	3	
Colloid or simple goiter	11	9	..	2	..	..	..	..	82	100	..	..	
Adenoma without hyperthyroidism	9	7	1	1	..	..	..	..	78	100	..	..	
Hypothyroidism	27	3	..	3	..	6	..	15	11	22	20	10	Ten cases could not be followed; five treated cases of hypothyroidism; twelve were subsequently improved by thyroid extract
Questionable hypothyroidism	12	..	..	2	..	8	..	1	0	25	..	..	
Hypopituitarism	10	7	..	3	..	..	..	..	70	100	..	..	
Acromegaly	2	1	..	..	1	..	..	..	50	50	..	..	
Hemophilism	1	1	..	..	..	..	..	..	100	100	..	..	
Pseudohemophilism	1	1	..	..	..	..	..	..	100	100	..	..	
Tumor of suprarenal ?	1	1	..	..	..	..	..	..	100	100	..	..	
Total	101	31	2	12	2	14	23	16	31	48	32	29	

13. Boothby and Sandiford (Footnote 2). Cecil, R. L.; Barr, D. P., and Du Bois, E. F.: Clinical Calorimetry, XXXI, Observations on the Metabolism in Arthritis, Arch. Int. Med. 29: 583 (May) 1922; also, while this article was in press: Cecil, Russel: Arthritis of the Menopause, J. A. M. A. 84: 175 (Jan. 10) 1924.

14. Boothby and Sandiford (Footnote 2). Pemberton, Ralph; and Tompkins, E. H.: Studies on Arthritis in the Army, II, Observations on the Basal Metabolism, Arch. Int. Med. 26: 241 (March) 1920.

15. Benedict, F. G.: The Influence of Inanition on Metabolism, Pub. 77, Carnegie Inst., Washington, 1907. Peabody, F. W.; Meyer, A. L., and Du Bois, E. F.: Clinical Calorimetry, XVI, The Basal Metabolism of Patients with Cardiac and Renal Disease, Arch. Int. Med. 17: 980 (June) 1916.

16. Pemberton and Tompkins (Footnote 14).

dismissed from consideration. It is probable that few or none of them suffered from an insufficient thyroid output. Of the twenty-seven cases listed as hypothyroidism, five patients had had the diagnosis made elsewhere, were treated, and had relatively normal heat production. Of the remaining twenty-two cases, in fifteen the basal metabolism was below — 20 per cent.; in six, between — 16 and — 20, and in one between — 11 and — 16. In all instances, the diagnosis was made on the presence of a history suggestive of hypothyroidism in conjunction with a subnormal metabolism.

This group appears to us to be especially significant from the standpoint of the value of the metabolism test in the practice of medicine. In none could one say that outspoken myxedema was present at the time of the test. It seems probable to us, however, that most if not all of the patients suffered from diminished thyroid activity. Including the five cases diagnosed previously, there were seventeen patients that showed distinct improvement or amelioration of symptoms after the administration of thyroid extract. Ten patients could not be followed satisfactorily, so that in these instances the therapeutic test could not be used to verify the diagnosis. In the clinical history, fatigue was the only constant symptom. Next in order came sensitiveness to or dislike of cold weather, and dry skin. Other symptoms, such as loss of hair, gain in weight, drowsiness, lessened general interest and emotional instability, were variable. A slow pulse was usual but not constant, nor bearing quite so parallel a relationship to hypothyroidism as tachycardia does to hyperthyroidism. Including the treated cases, we may thus summarize the pulse rate in these cases: from 45 to 55, four cases; from 56 to 65, twelve cases; from 66 to 75, eight cases; from 76 to 85, two cases, and from 85 to 95, one case.

There were twenty-one females and six males, which is in accordance with the general view that the disease is more frequent in the female sex. The average age was 39.1 years. The age by decades is as follows: from 10 to 20, five cases; from 20 to 30, two cases; from 30 to 40, four cases; from 40 to 50, eight cases; from 50 to 60, six cases, and from 60 to 70, two cases. With the exception of the rather large group between 10 and 20, the majority of cases occurred in the fourth and fifth decades, for the most part among women at or subsequent to the menopause. It is of interest that experimentally the weight of evidence is in favor of a depressed metabolism after castration.[17]

The occurrence of hypothyroidism in the absence of clinical myxedema and cretinism has been mentioned in the literature but has not, we believe, been sufficiently emphasized as an entity. Sturgis [18] has studied fifteen cases of myxedema, and gives an excellent description of the symptomatology of the disease, but does not report on the group to which we have reference. Means and Burgess,[1] however, in their series of 1,000 patients, report on thirty-two cases of myxedema and cretinism, and, excluding these, mention sixty-three patients with subnormal metabolism, some of whom were improved by the administration of thyroid. Boothby and Sandiford,[2] in their series of 6,197 patients with thyroid disorders, report 102 cases of myxedema, and, excluding these, mention eighty-six cases of "questionable hypothyroidism." In the latter group of patients, 30 per cent. were below — 20 in their metabolism, but little further information is revealed concerning them. McCann,[3] in his otherwise complete review of calorimetry in medicine, does not consider this group. In a recent communication, King [19] has analyzed thirty-six cases of subnormal metabolism in 200 subjects at the Johns Hopkins Hospital, most of whom he believed were suffering from hypothyroidism in the absence of clinical myxedema.

It seems evident that there is a group of cases characterized by distinct lowering of heat production and by symptoms such as fatigue, sensitiveness to cold, dry skin and, less constantly, drowsiness, lessened general interest and alertness, irregular alopecia, edema and gain in weight. The condition occurs more frequently in the fourth or fifth decades, and is more common among women. Hypothyroidism is suspected when the possibility is kept in mind, but the diagnosis as a rule cannot be made with certainty in the absence of a basal metabolism determination. Further proof is obtained by the beneficial effects of the administration of thyroid extract.

At this point it seems appropriate to consider the value of the metabolism test as an aid in diagnosis and treatment. In Table 5, an attempt has been made to record this in a quantitative manner. Its negative value in excluding the thyroid gland as a factor in the patient's symptoms is obviously applicable to each determination. In the column listed as Aid in Diagnosis have been included only those cases in which a diagnosis of thyroid dysfunction was established through the metabolism test, and in which by means of the clinical examination alone the diagnosis remained in doubt. It is obvious that there is a variable personal factor in this approach, depending on the skill and experience of the physician, particularly as applied to thyroid disorders. In this series, it was considered that positive diagnostic aid was secured in eleven of twenty-four cases of exophthalmic goiter, one of three cases of adenoma with hyperthyroidism, and twenty of twenty-seven cases of hypothyroidism. In other words, in these thirty-two cases the diagnosis would have been doubtful or overlooked in the absence of a determination of the heat production. As applied to the 101 cases of endocrine disorder, it was helpful to this extent in 32 per cent.; as applied to the entire series, in 7.3 per cent. of the cases. From a numerical standpoint, its value thus appears to lie mostly in the exclusion of the thyroid as the cause of the patient's symptoms. In establishing a positive diagnosis of thyroid disease, however, it still seems to play an important rôle, determining the diagnosis in one of every fourteen cases in a series of 437. It is of especial interest that this relatively large figure is produced by the cases of hypothyroidism.

Considered from the standpoint of its helpfulness in prognosis and treatment, the metabolism determination is theoretically of value in every case of hyperthyroidism and hypothyroidism, since it records quantitatively the activity of the thyroid. Actually, in our series it was utilized as an aid in treatment in sixteen of twenty-four cases of exophthalmic goiter, in each of the three cases of adenoma with hyperthyroidism, and in ten of twenty-seven cases of hypothyroidism, totaling twenty-nine cases.

17. Asb, J. C.: The Relation of the Interval Secretions to Metabolism, J. A. M. A. 79:93 (July 8) 1922.
18. Sturgis, C. C.: A Clinical Study of Myxedema, with Observations of the Basal Metabolism, M. Clin. N. Am. 5:1251 (March) 1922.
19. King, J. T., Jr.: Hypothyroidism, South. M. J. 17:662 (Sept.) 1924.

COMMENT

The first point considered in this study was whether any modification in interpretation of the basal metabolism reading was necessary in ambulatory patients as contrasted with patients resident in the hospital at the time of the test. Comparison of our results on 437 office patients with the larger series of Boothby and Sandiford and Means and Burgess, which were partly derived from hospital patients, shows no essential differences. Of 335 patients who did not have thyroid disease, 76 per cent. had a metabolism of ± 10 per cent. of the normal in terms of the Du Bois standards, and 97 per cent. within ± 15 per cent. Of a group of 2,417 reported by Boothby and Sandiford, 77 per cent. were within ± 10, and 90 per cent. within ± 15. Further comparison with the individual groups and with the series of Means supports the belief that no modification of interpretation is necessary in office practice, provided basal conditions are rigidly enforced.

On the basis of our results and those in the literature, however, it would seem preferable to adopt ± 15 as the range found in normal subjects and miscellaneous controls, rather than ± 10. Since only 76 per cent. of patients without thyroid disorders are within ± 10, and 90 per cent. or over within ± 15, the adoption of the latter would be necessary to include the vast body of miscellaneous controls. Exceptional cases of thyroid abnormality do occur between 10 and 15, both on the plus and minus variety. It seems to us better to recognize these cases as exceptional than to classify as abnormal the larger group of miscellaneous controls included in this range. The fact that the day to day variation in metabolism in the same individual is commonly greater than 10 per cent. lends support to this policy.

If we consider ± 15 per cent. as the basal metabolism range within which normal persons and patients without thyroid disease may be encountered, we find that of eighty-nine cases of nervous disease of various kinds, 98 per cent. were within this range; of sixty-three cases of obesity, 95 per cent.; of 184 cases of miscellaneous disease, 97 per cent., and of the 101 patients with endocrine disease, 47 per cent. In other words, there was a distinctly abnormal metabolism in 53 per cent. of the endocrine cases, and in only 3 per cent. of the nonendocrine cases. Our opinion is that a basal metabolism determination within ± 15 should be regarded as essentially normal unless there is a distinct clinical indication to the contrary, and that a determination beyond ± 15 as a rule indicates abnormalities in thyroid function, provided certain illnesses and symptoms known to alter the heat production are excluded; viz., cardiac insufficiency, undernutrition, leukemia, pernicious anemia, fever, gross tremors and emotional disturbance.[20]

Our second main consideration has been an attempt to estimate the value of this test in the practice of medicine. Much important information has been obtained from the routine employment of the basal metabolism determination in thyroid disease, as well as in numerous other conditions. As the results here presented have been derived solely from private practice, a special opportunity was afforded to inquire into its helpfulness as an aid in diagnosis and as an aid in treatment, for which these cases were largely referred.

Since, in 85 per cent. of the total number of 437 cases, the basal metabolism was within ± 15 per cent., it is obvious that from a numerical standpoint the value of the test in this series was mostly in the exclusion of thyroid disease.

In some of the cases with abnormal metabolism, the diagnosis could be made clinically. If we record those instances in which the metabolism test established a positive diagnosis of thyroid dysfunction previously overlooked or in considerable doubt, we find that 7.3 per cent. fall into this group, or approximately one in fourteen cases. Of this group, 62 per cent. were patients with hypothyroidism and 38 per cent. were patients with hyperthyroidism. It thus appears that the metabolism test is of especial value in the detection of hypothyroidism. It is believed that the milder examples of this condition are of considerable interest. What their ultimate significance will be, it is difficult to say at this time. From the study of our cases, it seems that the recognition of hypothyroidism in the absence of definite myxedema is of some importance, affording as it does the opportunity of bringing benefit through the administration of thyroid extract.

The use of the metabolism test in the prognosis and treatment of thyroid disorders is of value in registering the course of the disease in quantitative terms. Of our patients with thyroid dysfunction, 54 per cent. were followed for this purpose.

CONCLUSIONS

1. The determination of the basal metabolism in office practice requires no change in the standards used for patients in the hospital, provided basal conditions are rigidly observed. It seems better to adopt ± 15 per cent. as the range for normals and miscellaneous controls, rather than ± 10 per cent.

2. The value of the metabolism test in clinical practice seemed to be largely in the exclusion of the thyroid gland as cause of the patient's symptoms. In a small percentage of cases (7.3 per cent of the total number), the metabolism determination established a diagnosis of hyperthyroidism or hypothyroidism which, from the clinical examination alone, was in doubt or overlooked. It was of especial value in the detection of hypothyroidism.

3. Hypothyroidism in the absence of clinical myxedema warrants further consideration. Its recognition would seem to be of some importance, since beneficial effects follow the administration of thyroid extract in many of these cases.

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20. It is to be remembered that minor abnormality in thyroid function does not necessarily indicate distinct disease of the thyroid. Gradations in physical and chemical bodily constants are bound to occur. We may have a metabolism reading of + 10 per cent. in a patient with symptoms of exophthalmic goiter and in a person with chronic arthritis. In both instances the reading must be considered above the normal range; but the diagnosis in the first is hyperthyroidism and in the second case unclassified, as far as our present knowledge goes. Repeated tests would be indicated with particularly rigid attempts to secure basal conditions, and even under these circumstances a continuance of a slight elevation of heat production in the absence of all symptoms would not enable us to classify the disorder as hyperthyroidism. Borderline determinations can be interpreted only in the light of a complete clinical history. It is our impression that less confusion is apt to arise when the so-called normal zone is extended to ± 15.

Sunlight Without Rest Not Effective in Tuberculosis.—Sunlight and various other forms of radiation, in the hands of experts, are apparently exerting a very favorable influence in the more superficial types of tuberculosis; in lung tuberculosis they have yet to win their place. Yet drugs, tuberculins and sunlight and irradiation would not show much effect if at the same time rest was not part of the treatment; that is, the patient allowed to go his own way, with life unregulated and activities unrestrained, would in most cases "crumble" nevertheless.—A. K. Krause: Rest and Other Things, p. 17.

SURVIVAL OF THE MAMMALIAN TESTIS IN VITRO*

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This study was undertaken at the suggestion of Dr. Carlson with the aim of determining the length of time that may be permitted between the removal of the testis from the donor and a successful graft made into the recipient. So far as we know, in all work on testis grafting in experimental animals, immediate implantation of the excised testis has been made. In similar work on man, the testis has frequently remained for hours in the dead body of the donor, or the excised testis kept on ice for from one to thirty days before implantation, with reports of successful takes of the graft. If true, this would indicate an extraordinary survival of the mammalian testis outside the body under conditions of asphyxia, autolysis, accumulation of metabolites, and absence of nutrient material. Because of the inconclusive character of much of the clinical data, both as to the criteria of success of the graft and as to the complete absence of remnants of the recipient's own testis, it would seem of some importance that controlled animal experiments be made.

The literature on testis grafting in man is large. I will cite a few of the most striking recent reports of successful grafting of testes kept for hours or days outside the body before implantation. When immediate transplantation is made, a high percentage of takes in experimental animals, especially if the graft is placed in the scrotum, has been reported by many competent investigators. There is no reason to doubt similar success under similar conditions in man. Such testis grafts become vascularized, persist for months, and continue or resume at least some of the functions of the normal testis.

Lydston [1] reports seven cases of testis transplants. The testes remained in the dead body from six to twenty-four hours before removal, and were kept on ice from thirty to forty-eight hours before being grafted into the recipient. In two of the recipients, the castration was incomplete. In every instance but one, the implanted glands were reported to be in good condition from six weeks to fourteen months after the implantation. All these operations were considered successful; two showed recovery of sexual potency, one improvement, and the rest showed the glands in good condition, as judged by palpation.

McKenna [2] reports implantation in the scrotum of a completely castrated man of a cryptorchid testis three days after its removal from the donor, with return of potency. McKenna says that the graft could still be palpated after eight months.

Hunt [3] reports three transplantations into the abdominal wall. The testes were refrigerated in one case longer than thirty hours. In that case, normal sexual life was resumed three weeks after the operation.

Nixon [4] made a Stanley [5] implantation into a young man who had "improper development." The external genitalia appeared fairly normal except that the right testis was smaller than normal. Within nine months, the "remarkable transformation" was considered to be due to the implant.

Voronoff [6] reports a successful testis transplantation in a man after thirty days' refrigeration of the organ.

Thorek [7] reports two cases in which the testes were removed six and ten hours after the death of the donor, and implantation into the scrotum was made thirty-nine and thirty-six hours after the death of the donor. Both recipients had remnants of their own testes remaining; both were reported as able to function sexually for more than two years after the implantation. Emission accompanied the orgasm in one case.

The main criterion of growth and function of the testes grafts in these human cases is the statements of the patients of return or persistence of the ability to copulate. Even if we assume that these statements are in every case truthful, the well known influence of cerebral states or suggestion on sex potency in the human male renders it necessary to secure such objective data as the influence on the secondary sex characters and the histologic characters of the graft, before we are permitted to conclude that the graft has become vascularized and resumed some of the normal functions of the testes.

EXPERIMENTAL METHODS

We transplanted slices of testis tissue as well as the whole testis of adult white rats immediately after, twenty-four hours after, forty-eight hours after, and seventy-two hours after removal from the donor. The site of transplantation was in the scrotal sac within the tunica vaginalis. Autoplastic and homoplastic transplantations were made into completely castrated male animals. The operations were performed under ether anesthesia, with careful precautions taken to maintain complete asepsis. The slices of testis tissue were sutured to the scarified tunica vaginalis to prevent their being drawn up into and retained within the abdominal cavity. The whole testes were held in the scrotum by affixing skin clamps so as partially to occlude the inguinal canals. In some cases the latter precaution was not considered necessary.

The testes not used for immediate grafting were preserved in sterile Ringer's solution in cork stoppered bottles, sealed with paraffin. The bottles were kept on ice. Animals were examined post mortem from four to six weeks after transplantation, and the recovered tissues were fixed in Bouin's fixing fluid, stained with hematoxylin and eosin, and examined microscopically in serial section. At this time the condition of the prostate and seminal vesicles was noted. Sections of the tissue were taken at the time of transplantation in order to determine the condition of the tissue used.

Observations on the motility of the spermatozoa were made immediately, twenty-four, forty-eight and seventy-two hours after removal of the testes from the donor and kept as above. The testes were warmed up to 37 C., and examined by the hanging drop method.

HISTOLOGIC FINDINGS

Unsuccessful Transplants.—None of the twenty-four, forty-eight and seventy-two hour transplants gave evidence of a successful graft. In most cases, the transplanted tissue was completely absorbed. In a few instances, tubules could be readily recognized. These tubules were entirely necrotic, and while maintaining their form as tubules, showed no nuclear stain either in the germinal epithelium or in the basement membrane. No spermatozoa were found. No interstitial cells

* From the Hull Physiological Laboratory, the University of Chicago.

1. Lydston, G. F.: Sex Gland Implantation, J. A. M. A. 72: 396-398 (Feb. 8) 1919.
2. McKenna, C. M.: Illinois M. J. 40: 228-230 (Sept.) 1921.
3. Hunt, H. L.: Endocrinology 6: 625-654 (Sept.) 1922.
4. Nixon, C. E.: Endocrinology 8: 106-108 (Jan.) 1924.
5. Stanley, L. L.: Endocrinology 6: 787-794 (Nov.) 1922.
6. Voronoff, S.: Rev. Espan. de Urol. y. Derm. 25: 57, 1923.
7. Thorek, M.: Endocrinology 6: 771-775 (Nov.) 1922.

or tissue appeared that were not necrotic. The mass in most cases was surrounded by a capsule of fibrous tissue. Blood vessels containing red blood corpuscles were found inside and outside this capsule.

Successful Transplants.—Animal 1: These sections showed areas of necrotic tubules with a great increase of interstitial tissue between them. Other areas showed tubules with degenerated remnants of the germinal epithelium present. In these areas, the stroma, i. e., the connective tissue, was greatly increased. In all cases the increase of connective tissue was accompanied by an increase of interstitial cells; i. e., cells of Leydig. The mass was encapsulated with fibrous tissue. Blood vessels containing red blood corpuscles were seen within and without the capsule.

Animal 2: There were many tubules, necrotic in appearance, filled with degenerating sperm. There was no evidence of mitosis. The interstitial tissue was scanty in amount at the center of the transplanted mass. Toward the periphery, it increased in amount until there was more than the normal. There was an increased number of interstitial cells at the periphery. The mass was surrounded by a fibrous tissue capsule. Blood vessels containing red blood corpuscles were present.

Animal 3: The tubules at the center of the transplanted mass were necrotic and had disintegrated, while no interstitial cells were present. Toward the periphery of the graft the outlines of the tubules became more definite and distinct, while the connective tissue increased until it was greater in amount than is normally found. The cells of Leydig also appeared to be increaseed in number. Some tubules were present showing some remnants of degenerated germinal epithelium, the cells of which were swollen and irregularly placed. The lumina of some were filled with degenerating sperm. The graft was surrounded by the usual connective tissue capsule. A large number of minute blood vessels filled with red blood corpuscles were seen penetrating this capsule and passing into the transplanted tissue.

Animal 4: This graft contained no necrotic tubules. Every tubule was filled with concentrically arranged germinal epithelium, which, in nearly every case, completely obliterated the lumina. There was almost no interstitial tissue present. The epithelial cells were enlarged.

Animal 5: There were no necrotic tubules in this graft. The tubules approached the normal appearance, having only three or four germinal layers and containing numerous spermatozoa embedded in the germinal epithelium with their tails directed toward the lumina. Some of the tubules contained no sperm and had only one or two layers of germinal epithelium. The interstitial tissue was normal in amount.

Control Tissues.—In the testes fixed after being preserved in sterile Ringer's solution on ice for twenty-four hours, the tubules were arranged compactly, but the sperm and nuclei of the uppermost germinal layers of epithelium stained only faintly. There was no apparent difference in the ability of the interstitial tissue to take the stain.

In the testes fixed after being preserved in sterile Ringer's solution on ice for forty-eight and seventy-two hours, the tubules were arranged compactly. Most of the tubules stained but faintly. In some areas, the whole tubule took only the eosin stain. In other areas, the basement membrane and very little more than the bottom layer of germinal epithelium stained. In a few areas, the nuclei of two or three epithelial layers took the stain. The interstitial tissue stained a little more faintly than in the testes that were preserved twenty-four hours.

TABLE 1.—*Results of Testis Transplantation*

Time Between Removal and Transplantation	Number of Transplants	Number of Successful Transplants	Percentage of Success
Immediate	10	5	50
24 hours	16	0	0
48 hours	9	0	0
72 hours	14	0	0

OBSERVATIONS ON MOTILITY OF THE SPERMATOZOA

Twenty-four hours after removal of the testes from the body, a few of the spermatozoa were slightly motile. Instead of darting back and forth, they remained in the same relative position, and their tails moved sluggishly from side to side. Forty-eight hours after removal, no motility was observed.

COMMENT

The testis of the white rat is a rather fluid organ as compared with the testis of man or higher mammals. When the contents of the tunica albuginea are placed into a hypodermic syringe, they may be readily forced through a size 18 needle. This semifluid state, together with the presence of injured tissue, renders the graft more susceptible to phagocytosis when slices of the gland are used for transplantation. On the other hand, penetration of the body fluids into the graft is more easily accomplished, and this may facilitate the nourishment of the tissue pending the growing in of the blood vessels. This looseness of structure would offer no mechanical barrier to the laying down of a new vascular system. When the whole testis is implanted, the tunica albuginea presents a barrier to the entrance of the phagocytic cells and retards phagocytosis, which also is not accelerated by the presence of as much injured tissue as is the case when slices of tissue are transplanted. It also retards diffusion and will therefore make nourishment by the body fluids more difficult. By the time the new vascular system is established more necrosis will have taken place, resulting in the "taking" of a smaller amount of the graft.

The difficulties encountered in transplanting human testes include an increase of phagocytic action stimulated by the presence of injured tissue, and the limited amount of diffusion due to the density of the organ, which retards nourishment by the body fluids before a blood supply is established.

TABLE 2.—*Condition of the Secondary Sex Characters (Prostate and Seminal Vesicles) in Animals with Successful Grafts*

Animal	Secondary Sex Characters	Interstitial Cells	Seminiferous Tubules
1	Apparently normal	Relative Hyperplasia	Degenerated remnants of germinal epithelium with sperm present
2	Slightly atrophied	Relative Hyperplasia	Germinal layers did not stain; sperm present
3	Apparently normal	Relative Hyperplasia	Degenerated remnants of germinal layers with sperm present
4	Apparently normal	Marked hypoplasia	All germinal layers present; mitosis; no sperm
5	Apparently normal	Normal	All germinal layers present with sperm

The testes were transplanted into the scrotum because it is the most probable place to expect a successful graft. This optimal place, together with the proper technic, was chosen to avoid the criticism that the methods employed were responsible for the failure of the grafts. Moore, who has obtained the best results ever reported in mammalian testicular transplantation, and Voronoff, who reported very remarkable results in his mammalian and human testis grafts, used the scrotal method for their testis transplantations.

Histologic examination of the testes preserved in vitro for a short time is not conclusive, because the anatomic presence of intact cells after preservation, in this case, does not mean that their ability to grow

remains. The observations on motility of spermatozoa are of greater value. But had these results been positive they would have been of no significance, because Koppanyi has shown that the spermatozoa are the most resistant of all the elements of the seminiferous tubules, and especially since we know that spermatogenesis is not a reversible process. Since we secured negative results after twenty-four hours, we may conclude that the most resistant part of the seminiferous tubules has died or at least lost its motility.

If the transplanted testis survived, it would be manifested by its own morphologic character, and by its effect on the secondary sex characters and sex behavior. This method showed that after twenty-four hours outside the body the testis lost its transplantability. Real "takes" were obtained only on immediate transplantation. This part of the results confirms Moore's statement that testes may be transplanted into the scrotum and still maintain their function of spermatogenesis. More successful transplants were obtained in which only the Leydig cells were present. This confirms the old view that the Leydig cells are more resistant than the seminiferous tubules.

We wish to emphasize, however, that the results obtained by these experiments in rats are conclusive only for this species, and that we have no evidence that the testes of higher mammals or man would show the same lack of resistance in vitro.

CONCLUSION

Testis tissue of the rat preserved twenty-four hours or longer outside the body cannot be used for successful transplantation.

Clinical Notes, Suggestions, and New Instruments

PASSAGE OF A LARGE GALLSTONE BY THE RECTUM

George M. Niles, M.D., Atlanta, Ga.

I was much interested in the report by Gordon[1] concerning the passage of a large gallstone by the rectum, as I had had a similar case, in which I feel that the nonsurgical drainage of the gallbladder played an important part.

Dr. J. E. P., aged 58, about January, 1921, complained of a dull pain in the right hypochondrium, which radiated backward under the scapula. His complexion was extremely bad, and, as he did not want an operation, I suggested nonsurgical drainage. This I gave him at irregular intervals, for he lived outside the city, up to Aug. 15, 1924. He stated that this nonsurgical drainage always made him feel better, and when he could get two or three in rather close succession, his complexion cleared. Five days after the last drainage, while he was asleep, he dreamed that some one shot him in the side. He waked with a sharp pain, which lasted a minute or two, and then became easy. He passed the stone by rectum three days later. The stone was of the same texture as many other gallstones that I have seen, and has not dried out any since last August.

Two points of interest are that (1) after a duodenobiliary drainage, which removed much static bile, the patient was greatly relieved for days or weeks, and (2) the case would tend to strengthen Meltzer's theory of contrary innervation—that an injection of a 25 per cent. solution of magnesium sulphate into the duodenum in the vicinity of the ampulla of Vater tends to cause a contraction of the gallbladder and a relaxation of the ampulla.

The ampulla was evidently much relaxed, and the contraction was evidently of some energy; to force out this stone.

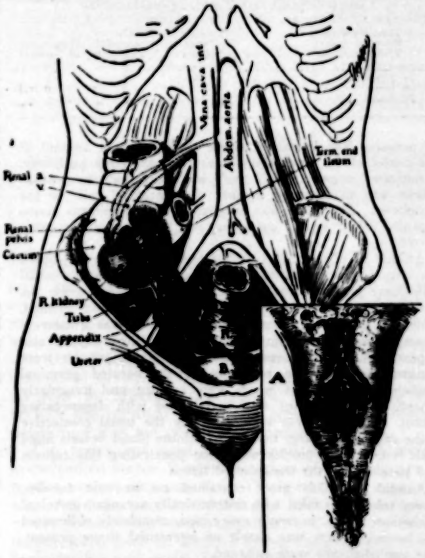
922 Candler Building.

1. Gordon, A. J.: An Unusually Large Gallstone Passed by Rectum, J. A. M. A. 83:2015 (Dec. 20) 1924.

CONGENITAL ABSENCE OF LEFT KIDNEY, LEFT TUBE AND OVARY, UTERUS AND VAGINA, WITH AN ECTOPIC RIGHT KIDNEY

C. A. Roeder, M.D., Omaha

There are many case reports in the literature on the congenital absence of one or more of the genital and urinary organs. They include interesting and valuable discussions on the subject of maldevelopment to which I am unable to add anything of interest. There is a congenital association between the genital and urinary systems in anomalous as well as normal development, and if there are external signs of a congenital anomaly, suspicion should arise as to a possible internal anomaly. This case is reported and illustrated owing to the marked maldevelopment.



Congenital absence of the left kidney, left tube and ovary, uterus and vagina, with an ectopic right kidney.

REPORT OF CASE

A woman, aged 24, single, a postal clerk, 5 feet, 4 inches (163 cm.) in height, weighing 110 pounds (50 kg.), complained of amenorrhea and pain in the region of a mass long noticed in the right lower abdomen. The father and mother were well; three brothers and one sister were well, and one sister had died of measles. There were no stigmas of degeneration in the family. The patient had had smallpox at 21, measles and chickenpox when a child, and an attack of jaundice one year before examination, accompanied by severe vomiting. She had never menstruated. At 21, she consulted a physician for amenorrhea. He found a "tumor" in the right lower quadrant of the abdomen that had caused no distress until a few months before examination, when attacks of colicky pain in this area occurred, gradually forcing the patient to consult a physician again. There had been no increase in size in this tumor. Pressure from clothes elicited enough tenderness to prohibit a corset. She had had sick headaches for six years, accompanied by vomiting.

The facies denoted an intelligence and character below normal. The general physical examination, aside from the region of the mass in the lower abdomen and the pelvis, was negative. On palpation, there was no tenderness over this mass, which measured about 3 by 3 inches, and the thin abdominal walls permitted an outlining which resembled a kidney. At the lower border there was marked tenderness at one point, resembling a chronically inflamed appendix. There were no external signs of a vagina, and two unusually small labia minora projected from each side of the vestibule. On bimanual examination through the rectum, no signs of a uterus or adnexa could be felt. Examinations of urine and blood were negative. The Wassermann test was negative.

A diagnosis of chronic appendicitis was made, which was corroborated by an operation. The mass proved to be a kidney, normal in size and appearance, with the pelvis posterior to the renal vessels, pointing upward and outward. The suprarenal gland lay about 1 inch above and to the right of the kidney. The right ovary and tube were lying attached to the peritoneum, which covered the lower border of the kidney, and apparently were normal. There was an absence of the left kidney, left tube and ovary, uterus and vagina. The stomach, duodenum, liver, spleen, pancreas and gallbladder were apparently normal. The appendix was chronically inflamed, and I removed it. The recovery was uneventful.

520 Bankers Reserve Life Building.

SPONTANEOUS RUPTURE OF ACHILLES TENDON WITH VICIOUS HEALING TO TIBIA AND ANKLE JOINT

EDGAR D. OPPENHEIMER, M.D., NEW YORK

M. H., a man, aged 32, in his younger days a prizefighter, was well built and athletic. His history and examination as to any disease or local condition having any bearing on this accident was negative. The Wassermann reaction was negative. While engaged in a swimming pool as attendant, he slipped on the tiled floor and felt a severe, sharp pain in the back of the heel, which was very disabling, so that he could walk only with extreme difficulty. The chiropodist came to his assistance and strapped his foot. He compressed the heel-cord with a tight adhesive dressing against the tibia, because this was the seat of the pain. In spite of the severe disability and inability to contract the gastrocnemius, he kept at his work, although he had to walk 3 miles in open country each day. Had he not been used to severe physical punishment, he would not have been able to stand this as he did. After two months of this maltreatment, failure of spontaneous cure forced him to seek medical aid. He had then the symptoms of a calcaneus—no use at all of the ankle flexors. He walked with extreme difficulty and some pain. Foot cavus and atrophy of the calf were marked. In spite of the voluntary contraction of the gastrocnemius, no power at all in ankle flexion was present. The tendon on palpation appeared to be present or healed, as only a slight notch could be felt. I advised him to have an operation to shorten and suture the tendon; also that he was entitled to workmen's compensation. A request for funds from the insurance company resulted in his being treated with baking and massage for three months before the company acknowledged that nothing was being accomplished by this. Finally, five months after injury, there being no improvement, the company authorized the operation. The tendon felt much thickened, but there was no flexor action at all. Pain was not complained of, only disability.

On operation, the torn part of the tendon was found replaced by a much heavier connective tissue portion of cartillaginous consistency. This tissue was also connected to the posterior part of the capsule of the ankle joint and to the posterior surface of the lower part of the tibia. This was dissected free, the tendon shortened and sutured with No. 16 braided paraffin silk and the foot placed in a plaster cast, in equinus. The tissue removed showed no inflammatory or infectious lesion, only cartilage cells and dense connective tissue. After two months in the plaster, the tendon was found united and free of adhesions, and a very gradual recovery took place. After three years, the return of function was practically complete. The patient could hop on the toes of the injured foot, free from all pain. Some cavus and calcaneus persists, and the calf is smaller.

COMMENT

In this case, the strapping and rubbing caused bleeding to spread into the tissue behind the ankle. The organization of this tissue, as a result of the constant use and stress, caused this blood and granulation to assume the characteristics of connective tissue as modified by the function exercised through it. This resembles the action of callus and of connective tissue elsewhere in the body, which in healing and replacing granulation tissue builds up that form of connective tissue adapted to its particular use. After the operation, this tissue, although in approximation, did not reform because no mechanical stress was present, and a loose tissue allowing motion replaced it.

A ruptured tendon should be placed at rest, and the joint should be put in the position of shortening. A tight bandage should never be put around the heel-cord. In this case the rubbing of the strapping around the ankle caused an effusion and scar tissue production over an extended area, and fastened the tendon to the bone. This is a condition which I am unable to find described in a search of the literature among the many cases of spontaneous tendon rupture that are recorded. It shows the possibility of a vicious healing that can result in similar cases. We are very liable to produce this in an operation about the ankle joint when the Achilles tendon is divided through the same incision and the blood effusion connects these two spaces. This is frequently done in tendon operations after poliomyelitis. In these cases an incision to expose the tibialis posticus, flexor longus hallucis, or peronei is extended to do a heel-cord lengthening. Possibly the long period of immobilization and the inability to build strong connective tissue in these aplastic cases accounts for its not having happened. Also, we do not apply tight bandages in these cases. The possibility of this vicious union should, however, be considered.

Following fractures and injuries about joints, we often see that a muscle contracts and does not cause motion at the joint. In these cases, scar tissue inhibits motion of the joint and binds together all those fascia planes which should allow of gliding. In this case the condition was puzzling because the patient had free and painless ankle motion, a thick and apparently united tendon, good gastrocnemius contraction, and no transmitted action.

261 Central Park West.

FRACTURE OF SKULL IN CHILD

FRANCIS P. RICHARDS, M.D., MACKAY, IDAHO

This case has two chief points of interest: (1) the immediate survival and recovery from an extensive injury to the brain, and (2) its history for the subsequent two or three years.

REPORT OF CASE

In July, 1921, I attended a child just past 4 years of age, who had been found under the front feet of a horse at the head of a dark stall in a barn, where he had been playing. He was carried into the house unconscious. The left side of the head was greatly swollen. The mother tried to revive him by applying cold applications, and friction to the extremities; these measures being without result, he was taken in an automobile over a rough road 40 miles to the nearest town. I saw him about eight hours after he was found.

The boy was of slight but wiry build, and deeply comatose. Respiration was slow, six or less to the minute, stertorous and somewhat of the Cheyne-Stokes type. The pulse was thready and could not be counted. The pupils were widely dilated and did not react to light. The eyes turned up and were divergent to the same side, with the eyelids open. There was no subconjunctival hemorrhage, but the conjunctivae were deeply injected. A tense swelling extended over the left parietal region; it did not pulsate, and pressure over the most prominent part disturbed the patient and gave

crepitation. The patient was quiet, except for the stertorous breathing. The skin was cold and pale. There was no evidence of bleeding from the nose or ears, nor had the scalp been lacerated. The temperature was apparently subnormal and was not taken. The muscular system was generally flaccid, but the reflexes were not tried.

As the boy's condition was desperate and he was getting rapidly worse, I operated at once. The chance of saving him seemed so small that it was a question whether it was not better to allow him to die in bed in peace than on the table. The scalp was shaved, and a rubber tube was placed over a sterile towel around the head to control bleeding from the scalp. After cutting away the towel adequately, I made a semioval incision, following the outline of the most prominent part of the swelling, and turned down a good sized flap. There was considerable hemorrhage, dark blood escaping on incision of the aponeurosis, and bright red blood oozing from the lines of fracture. This bleeding was controlled by gauze while the injury, which was extensive, was examined. The skull had been crushed, or, rather, "caved in," over the entire parietal region. The bone above and posterior to the ear was depressed firmly on the brain possibly as much as 25 mm., and back of this was an area composed of small fragments between which the blood was flowing freely. A button of bone was removed from the uninjured bone at the edge of these, and, being loose, the fragments were easily lifted away. The dura was in shreds; the large posterior branch of the meningeal artery was torn across, and the blood was spurting from it, apparently being under high tension. When this vessel was tied, all bleeding stopped. The part of the brain that had been directly under the fragments was a pulpy mass, composed of brain substance, torn dura, small particles of bone and blood clots, all churned together until it was semifluid.

In wiping away this mass of débris, I encountered a fragment of bone that had been driven vertically deep into the brain. This fragment, shaped like an Indian arrowhead, was between 10 and 15 mm. at the largest end, and was about 40 mm. long. The edges were sawlike, and had been the cause of the great destruction of brain tissue by the effect of the vibration of the brain against the fragment during the long ride over a rough road. The cavity left by the destroyed brain substance would easily accommodate an English walnut. The bone anterior to the fragmentation was elevated in place, considerable force being necessary to do this. The cavity was lightly packed with iodoform gauze, with one end left long. The dura was trimmed and drawn together with two fine catgut sutures, which left the defect uncovered over the cavity nearly 20 mm. across, and the flap with the aponeurosis was sutured with silkworm gut. A few strands of the gut with the long end of the iodoform gauze was left for drainage. The patient was returned to bed after twenty minutes of very light etherization.

Postoperative progress was rapid. The patient reacted promptly. The breathing was easier and near normal, the pulse slower and stronger, and the patient quiet. In a few hours he became restless and moaned considerably, and soon began to make definite complaints. On the second day he began to notice things around the room, and was fully conscious at the end of forty-eight hours. There was no infection, and the iodoform gauze packing and the drain were removed on the third day. Healing was perfect and he was out of bed on the tenth day, and was running around playing with the other children, the same as ever before the end of three weeks.

Repeated examinations, physical and mental, have failed to show any deficiency. At the time of his illness, the boy was somewhat spoiled in being allowed to have his way, and if crossed he would show temper, but no more than any other child who has been spoiled in this way. While naturally slight in build, his growth has been perhaps slower than normal. Mentally, he is as bright as any other average child of his age, and in school progresses as the other children. He seems slow in reading; but, if anything, his intelligence is above that for his age. The deficiency in the bone, including the button, has closed until only a small, soft spot is felt in the center.

Special Article

ACCIDENTS FROM ZINC STEARATE

SECOND REPORT OF THE COMMITTEE ON ACCIDENTS FROM ZINC STEARATE DUSTING POWDERS APPOINTED BY THE BOARD OF TRUSTEES OF THE AMERICAN MEDICAL ASSOCIATION

At the June, 1924, meeting of the Board of Trustees, the Committee on Accidents from Zinc Stearate, appointed by the Board on resolution of the House of Delegates, presented its report. The conclusions were:

Your committee can find no scientifically controlled evidence to justify the statement that zinc stearate powders as used in the nursery possess any advantage over other well known powders, such as talc and powders of mixed composition.

The committee is of the opinion that for the protection of the public, zinc stearate powders and powders containing considerable zinc stearate, for toilet and nursery use, should be sold only in containers with permanently attached covers. The shape of the cover should be such as to render it impracticable for an infant to place the top in his mouth. The cover should be kept automatically and positively closed whenever the container is not in use; for instance, by a slide or valve closing the holes at all times, except when operated by firm pressure by the hand of the person using it, the slide or valve being held in position by a spring sufficiently strong that an infant cannot operate it. Conspicuous, clearly worded caution labels should be placed on all containers of stearate of zinc dusting powders for toilet or nursery use, warning users to keep such containers out of the reach of infants and children.

The Board, in receiving this report, authorized the committee to continue its work. The committee now offers its second report.

REPORTS OF ACCIDENTS

Twelve accidents arising from accidental inspiration of zinc stearate dusting powders were reported by Heiman in 1922. As a result of a request published in THE JOURNAL, the committee has received reports of forty-three cases. Last August, Dr. W. A. Evans of the Chicago *Tribune* commented in his syndicated health column concerning the findings of this committee. There were sent to him reports of seventy-five cases, which, in turn, were forwarded to the committee. *The committee therefore has reports in its possession of 131 cases of poisoning, twenty-eight (21 per cent.) of which terminated fatally.* The committee has also heard indirectly of many other accidents, but these were not reported officially. As the cases referred to were in response to these two notices only, it appears that this hazard is much greater than the committee surmised.

In its effort to mitigate the danger, the committee has worked along two lines: (1) to obtain the cooperation of the manufacturers and distributors of zinc stearate powders; (2) to obtain representative opinions concerning the usefulness of zinc stearate in the nursery.

CONFERENCE OF MANUFACTURERS

The committee informed the large distributors and manufacturers of the number of instances in which babies' lives had either been jeopardized or lost. The frequency of such accidents and the necessity for immediate action prompted the committee to call a conference. Oct. 31, 1924, nine representatives (a number of other manufacturers sent messages by mail) met at the Association headquarters with the members of this committee; also Drs. I. D. Rawlings and W. A. Evans of the Illinois State Board of Health. The matters discussed were self-closing containers, limitations of material, shapes, sizes, number of holes in containers, etc.; also cautionary labels and legislation.

After an open discussion, the manufacturers' representatives went into conference. The letter of agreement sent to the committee is as follows:

After the meeting with your committee, Friday, October 31, the group of manufacturers, packers and distributors of zinc stearate dusting powders went into conference and begs to submit the following as a result of that conference:

1. It was unanimously agreed to adopt a self closing top.

2. We recognize that consideration should be given to the number, size and shape of openings in the container.

3. We agree that a precautionary statement on the label is desirable and, should you wish it, will submit the various precautionary statements for your approval.

4. It is our opinion that, with the adoption of 1, 2 and 3, no legislation covering this subject is at all necessary.

The group formulating the foregoing opinions was as follows: Dr. Burdick, representing the Abbott Laboratories; Dr. Searle, representing the American Pharmaceutical Manufacturers' Association; Thurston Merrill, representing William L. Merrill & Co.; Dr. Murray, representing Merck & Co.; Euclid Snow, representing the Mallinckrodt Chemical Company; H. H. Fisher, representing the American Druggist Syndicate; F. L. McCartney, representing the Norwich Pharmacal Company; H. Trawny, representing Lehn & Fink, and H. W. Rhodehamel, representing Eli Lilly & Co.

Very truly yours,
H. W. RHODEHAMEL,
Secretary for the Group.

The committee believes that the large portion of accidents from zinc stearate has been due to the lack of proper containers; the action taken by these representative manufacturers in providing a container which the baby cannot open will undoubtedly mitigate the hazard. As zinc stearate powders are sold mostly to the laity direct, the use of a clearly worded caution label is imperative. In view of this action on the part of the manufacturers, the committee recommends that no steps be taken now by the Association for the introduction of legislation.

OPINION OF THERAPEUTIC VALUE

The chairman of the committee addressed a letter to fifty well known pediatricians throughout the United States, inquiring whether or not the use of zinc stearate powders for infants should be discouraged by the profession. An opinion, based on experience, was requested as to whether or not dusting powders made up wholly or in part of zinc stearate are necessary for the comfort and health of babies and young children; also, if such powders have any merit, does the hazard to infant life outweigh their advantages? Thirty-three replies were received;[1] thirty of the writers were of the opinion that zinc stearate was not necessary and that the use of it by the medical profession should be discouraged; two were doubtful, but inclined to believe that there was some value in zinc stearate, and one stated that "he would be loath to give it up."

CONCLUSIONS

Zinc stearate is sold largely as a household commodity and not on recommendation of the physician; the sales approach a number of million packages a year. Its danger is evidenced by the 131 reported cases of accidents with 21 per cent. mortality, and this represents probably only a relatively small number of accidents. The willingness on the part of the large manufacturers to provide safety features on the can should be followed as an example by all distributors; if this is carred out faithfully, the public will be protected and legislation will be unnecessary. The committee desires to express its appreciation for the excellent spirit of cooperation shown by manufacturers.

Aside from the commercial aspect is the scientifit; the committee believes that the evidence is against the value of zinc stearate as a dusting powder for infants.

RECOMMENDATIONS

It is recommended:

1. That *all* manufacturers of zinc stearate powders for infants be requested to use a self-closing container of a type which does not lend itself to manipulation by an infant;[2] and to place a uniform caution label on the container.

2. That the use of zinc stearate as a dusting powder for infants be discouraged by the medical profession because of lack of therapeutic evidence of its value.

ISAAC A. ABT, M.D.,
Representing the Section on Diseases of Children, Chairman.

WILLIAM C. WOODWARD, M.D.,
Executive Secretary, Bureau of Legal Medicine and Legislation.

PAUL NICHOLAS LEECH, PH.D.,
Director, A. M. A. Chemical Laboratory.

1. These replies will be appended to the report as it appears in reprint form.

2. Sometimes the accident is caused by an elder child sprinkling the powder (which is generally delivered from large holes) directly in the infant's face.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

TUBERCULIN-KOCH (See New and Nonofficial Remedies, 1924, p. 309).

H. K. Mulford Company, Philadelphia.

Tuberculin Intracutaneous (Human Type).—Marketed in single packages (M331-050) of one intradermal syringe containing 0.00005 Cc. of tuberculin old "O. T."; in packages (M331-051) of five intradermal syringes each containing 0.00005 Cc. of tuberculin old "O. T." and in single vial packages (M331-028) containing tuberculin old "O. T." sufficient for fifty tests.

SQUIBB'S LIQUID PETROLATUM WITH AGAR.—A mixture composed of liquid petrolatum-Squibb, heavy (California), 50 Cc.; agar, 1.5 Gm.; sodium benzoate, 0.1 Gm.; acacia, glycerin and water sufficient to make 100 Cc.

Actions and Uses.—Squibb's liquid petrolatum with agar has the action of liquid petrolatum. It is claimed that the agar by adding bland bulk to the bowel contents stimulates peristalsis in a normal way and that the combination of liquid petrolatum with agar mixes readily with the feces and softens them, thus insuring a maximum effect.

Dosage.—For adults, 15 to 30 Cc. (4 to 8 fluidrachms) at bedtime, or morning and night if necessary, an hour or two after eating. For children, 4 to 8 Cc. (1 to 2 fluidrachms).

Prepared by E. R. Squibb & Sons, New York. No U. S. patent or trademark.

MERCUROSAL (See New and Nonofficial Remedies, 1924, p. 207).

The following dosage form has been accepted:

Mercurosal Ampoules 0.1 Gm.: Mercurosal, 0.1 Gm., in distilled water, containing 0.1 per cent. of sodium citrate, 5 Cc.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, MARCH 7, 1925

SOME CURRENT VIEWS ON INFANT FEEDING

Few departments of clinical medicine have experienced as many varieties of "styles" in practice within the last few decades as has infant feeding. In rapid succession, novel procedures have been adopted in widespread ways, only to be abandoned with the advent of a newer proposal. Enthusiasm for each has waxed and waned until an unbiased observer might well wonder whether pediatricians have not been following wrong ideals. In an illuminating address, Professor Park [1] of Yale University remarked not long ago that when one surveys the field of infant feeding, it is evident that almost all progress in the art of infant feeding has been empiric. We despise the influence of the grandmother in the feeding of the infant, but have derived many ideas from her and are still under her tutelage. To the present, science has served largely to explain why empiricism moved in this or in that direction, or to show that her steps have been taken on solid ground.

This should not be interpreted as an indictment of science. The latter is not always creating novelties; in large measure, scientific effort is directed toward a more logical interpretation and a more rational application of fundamental facts and principles. The scientific mind admires common sense and appreciates criticism. A clever investigator and a keen observer may succeed in turning failures into successes through the recognition of mistakes and what they signify. Pediatrics has long sought, not without much justification, to imitate breast milk when artificial feeding becomes necessary in the life of infants. Park notes that breast milk is not the best food for the infant under all conditions, though it is the best food under almost all conditions. Breast milk is a poor repair food. Park has pointed out that after wasting illnesses infants may not gain for long periods if fed only breast milk, but will gain at once if cow's milk protein is added to the breast milk feedings or mixed feeding begun. The same phenomenon is sometimes observed in premature infants who fail to gain on breast milk alone, but gain on combinations of breast milk and cow's milk feedings. The reason seems to be that the protein and salts in breast milk are not adequate to meet the abnormal requirement for protein of these abnormal infants.

The discovery that many infants will do better when fed concentrated foods than when fed dilute foods has raised the question as to the rationale of the widespread practice of dilution in infant feeding. It is doubtless true that the organism of the growing baby has a water need proportionately much greater than that of the adult. The water requirement of the young infant, measured in terms of breast milk, is about 170 to 180 c.c. per kilogram of body weight, and declines during the first year to not more than 120 c.c. per kilogram. We agree with the New Haven school in believing that dilution of milk mixtures is overdone almost everywhere in this country. It is based on the untenable assumption of improved digestibility of the dilute mixtures; whereas they often are productive of harm by causing the child to vomit or refuse food, so that he will receive too few calories to satisfy his nutritional needs. The use of concentrated food may be of enormous advantage to feeble infants that cannot consume large volumes; likewise in the treatment of children with dysentery and acute infections, who require high calory feedings but are unable to take or retain more than a small quantity of food at a time. There are conditions, leading in extreme form to dehydration and anhydremia, that call for administration of fluids. Such cases have no bearing, however, on the general problem of dilution and digestibility.

Rash, indeed, is he who will extol the virtues of a particular group of nutrients to the exclusion of the others. Fat, carbohydrate and protein—each has been attacked by exponents of systems of infant dietotherapy; and each has retained some defenders. The "percentage system" demanded a balance between the fat, carbohydrate, protein and salts of the infant's food, and postulated that the relations between the constituents might have importance as well as the absolute quantities themselves. Yet "protein-milk" has had ardent advocates in certain maladies despite its poverty in preformed carbohydrates, and other illustrations of the alleged superiority of comparable extremes of diet might be cited. Park has reminded us that, despite the seeming chaos, there are not so many different foods as there appear to be, because many foods that seem quite different really differ from one another only in dilution, and yet other foods differ only in minor respects which amount to nothing. The upshot is that protein can be burned and utilized, or can furnish carbohydrate; and carbohydrate and fat are to a considerable extent interchangeable. In all foods fed to infants, at least 10 per cent. of the calories must be furnished in protein. Almost all

1. Park, E. A.: Newer Viewpoints in Infant Feeding, Proc. Connecticut State M. Soc., 1924, p. 193.

mixtures ordinarily used in infant feeding will be found to contain between 10 and 20 per cent. of the calories in protein. It is a matter of little moment in the case of most infants whether the larger proportion of the remaining 80 to 90 per cent. of the calories is furnished chiefly in carbohydrate and to a small extent in fat, or in smaller amounts of carbohydrate and larger amounts of fat.

In diagnostic fields, too, there are signs of changing views. A frequency of stools in infants fed artificially no longer seems utterly appalling. There may be harmless diarrheas which should not be treated by dilution or starvation. The new point of view, as Park remarks, is not that frequent stools represent the normal condition when certain foods are given, but that many infants, particularly in the first few months of life, may have frequent stools on a variety of foods when in a state of partial starvation, and, further, that to cause the diarrhea to cease and to make the infant thrive it is necessary to give not less, but more food, usually with a substantial increase in the form of carbohydrate. Something of the current attitude is represented by the recognition that stools are not the immediate determining guide to the feeding of the infant; that many infants thrive only when they receive concentrated milk mixtures; that many infants require not less than from 150 to 200 calories per kilogram of body weight, and, finally, that milk fermented with the lactic acid-producing group of bacilli is more easily digested by many infants than is sweet milk. Even the cooking of cow's milk is tolerated.

THE HYPOTHALAMUS AND DIABETES INSIPIDUS

The theories of the pathogenesis of the type of chronic polyuria familiarly known as diabetes insipidus have proved to be singularly elusive. There is evidence of long standing character that experimental injury to different parts of the brain may be followed by an increased urinary output, usually of a transitory nature. Presently it was observed that experimental procedures on and about the hypophysis cerebri are frequently followed by excessive thirst and polyuria. This seemingly close relationship between the pituitary structures and diabetes insipidus has been accentuated by the independent discoveries that extracts of the posterior lobe may have a somewhat transient diuretic effect, and that therapeutically the administration of the extracts of the posterior lobe are effective in controlling the secretion of urine in cases of diabetes insipidus or in the experimental polyurias caused by operations on the hypophysis.[1] Furthermore, in some instances of diabetes insipidus, lesions have been reported present in the hypophysis. Polyuria of this type persists after denervation of the kidney, and cannot, therefore, be attributed to a disturbance of its nervous or vasomotor regulation. The kidney conserves its ability to concentrate the urinary secretion. In fact, all the evidence at hand points to an extrarenal factor in the genesis of the polyuria. Thirst usually precedes the latter.

The contradictions at hand are explained partially at least by the more recent discoveries that a condition of polyuria may result from injury to the hypothalamic region of the central nervous system. Even extremely minute lesions in the para-infundibular region of the hypothalamus may bring this about, as has been demonstrated anew by the striking researches of Bailey and Bremer[2] at the Harvard Medical School. The permanent experimental polyuria, when it occurs, has all the characteristics of diabetes insipidus in man. There is no indication at present that the provocative lesions act by the intermediation of the pituitary.

This has lately been corroborated at the University of Chicago by the investigations of Curtis.[3] Through injury of the hypothalamus in the region of the pituitary stalk, it was possible to produce, among several transient polyurias, one of long duration. The phenolsulphonephthalein elimination was normal. High protein diets, those containing considerable protein and salt, and salt added to all diets clearly increased the water exchange. The chlorids were especially polyuric. Under enforced conditions, water and fluid restriction with salt feeding, the kidney was able to concentrate both solids and chlorids. The blood chlorid was found consistently higher than normal, and higher than that of normal subjects on similar regimens. Pituitary extract given subcutaneously decreased the water exchange, increased both the solid and chlorid concentration of the urine, and lowered the higher blood chlorid. At necropsy, changes in the hypophysis were not found. There is accordingly a growing agreement that the pathogenesis of certain types of polyuria involves essentially the hypothalamus. Curtis believes that it is as reasonable to regard experimental diabetes insipidus as a hypothalamic thirst phenomenon as to regard it as a primary pituitary polyuria. The polyuric action of the chlorids, the increased blood chlorid becoming lower as the polydipsia and polyuria lessened after pituitary extract, and the changes in concentration of the urinary chlorids after pituitary extract, suggest to Curtis that the chlorids play more than a passive part in the disturbance. It may be, he adds, that this is in relation to the thirst mechanism. In any event, an era of far clearer understanding of what so-called diabetes insipidus involves seems to have begun.

1. Howell, W. H.: Physiology of the Pituitary Gland, J. A. M. A. 83:1684 (Nov. 22) 1924.

2. Bailey, Percival; and Bremer, Frédéric: Experimental Diabetes Insipidus, Arch. Int. Med. 28:773 (Dec.) 1921.

3. Curtis, G. M.: The Production of Experimental Diabetes Insipidus, Arch. Int. Med. 34:801 (Dec.) 1924.

THE MEASUREMENT OF BASAL METABOLISM

Basal metabolism is one of those scientific methods that have been brought in recent years "out of the realm of pure physiology into the domain of clinical medicine." The instruments for making the requisite measurements are in widespread use, the underlying principles of technic have received much discussion, and the possible applications of the findings have been extensively reviewed.[1] Through the efforts of Benedict of Boston and Krogh of Copenhagen, "simplified" models have been introduced in an attempt to produce relatively inexpensive and easily manipulated apparatus of sufficient accuracy for clinical use. Their possible applications in the diagnosis of certain disorders have found repeated reference in THE JOURNAL.

Of late there have been occasional expressions of skepticism regarding the value of indiscriminate estimations of the basal metabolic rate. The technic calls for precision and skill on the part of the analyst, as well as cooperation on the part of the subject. The character of some of the current criticisms is reflected in a recent warning by Du Bois of New York, well known for his studies in clinical calorimetry. There is a tendency at present in some hospitals, he remarks, to turn over the management of the metabolism laboratory to a technician who has had no training in medicine or in the science of nutrition. Such persons often do well in metabolism work just as in roentgenray diagnosis or bacteriology. On the other hand, they can scarcely be blamed if they get far off the track and make disastrous errors. They may be excellent in their technic, but the management of experiments and the interpretation of results in patients should be in the hands of a clinician who has made some special study of metabolism. This person, Du Bois adds, should be thoroughly familiar with the technic himself, as it is only in this manner that he can be on guard against all the possible errors.

Even more disconcerting is the recent assertion of the calorimetrist Lefèvre[2] in Paris that the modern basal metabolism technic is fundamentally wrong in that the pure basal metabolism cannot be measured unless the subject is immersed in a neutral water bath of from 35 to 36 C. (95 to 96.8 F.), to prevent loss of heat to the environment. At the Carnegie Institution Nutrition Laboratory in Boston, F. G. and C. G. Benedict[3] have consequently made measurements on man to ascertain whether there is justification for the radical incrimination of the current technic in clinical calorimetry. The oxygen consumption of the same person—the best index of basal metabolism in the absence of direct calorimetric measurement—was compared during sojourn in baths at a temperature of from 33 to 38 C. (91.4 to 100.4 F.) as well as at room temperature following the usual clinical procedure. The basal values were not lowered by immersion in the bath. The evidence secured does not point toward any lowering of metabolism as the result of even a prolonged sojourn in the bath, and it is clear to Benedict that the heat production under the conditions studied must be entirely independent of the heat lost to the environment. Whatever changes may be recommended in the present admittedly imperfect routine of making basal metabolism measurements, Benedict reports, certainly the use of the neutral bath is not justifiable. It will be a relief to clinicians to know that in this respect at least their technic has not been entirely wrong.

1. Grafe, E.: Die pathologische Physiologie des Gesamtstoff- und Kraftwechsels bei der Ernährung des Menschen, Munich, J. F. Bergmann, 1923; Ergebn. d. Physiol. **21**:1, 1923. Boothby, W. M., and Sandiford, Irene: Basal Metabolism, Physiol. Rev. **4**:69 (Jan.) 1924. McCann, W. S.: Calorimetry in Medicine, Medicine **3**:1 (Feb.) 1924. Du Bois, E. F.: Basal Metabolism in Health and Disease, Philadelphia, Lea and Febiger, 1924.

2. Lefèvre: Bull. Soc. sc. d'hyg. alimentaire **10**:595, 606, 1922.

3. Benedict, F. G., and Benedict, C. G.: The Neutral Bath and Its Relation to Body Heat, Proc. Nat. Acad. Sc. **10**:495 (Dec.) 1924.

Current Comment

THE HYGIENIC SIGNIFICANCE OF NICKEL

Information of medical interest regarding the behavior of various metals with respect to bodily function has for the most part been derived from the study of their effects when they are used as drugs, or through observation of their rôle in relation to man in industrial processes. Nickel is an element that has not entered into the category of compounds useful in therapy; and, until recently, toxicologic consideration of it was restricted to the jewelry and allied industries in which nickel plating is carried out. The element has long been demonstrated to have such a widespread distribution in nature that it enters into the composition of plants and animals with the inevitable result that man on a mixed diet must habitually ingest small quantities. Of late, a new interest has been introduced through the use of nickel as a catalyst in the hydrogenation of oils that are used for human consumption. The residual amount in the hardened fats is present at most in a magnitude of the order of 1 mg. per kilogram. The intake from this source by persons is now regarded as too insignificant to warrant serious consideration from a toxicologic standpoint.

Larger quantities of nickel may, however, enter into foods that have been prepared with nickel cooking utensils, so that the possibilities of potent effects presented thereby have caused greater concern. A recent study of its hygienic significance,[1] made at the Harvard School of Public Health, shows that even so resistant a metal as nickel is corroded to some degree during ordinary cooking operations. The action is slight, however, and probably far less than what occurs with the widely used tin and aluminum. Some of the corroded nickel entering the food is absorbed and finds its way into the urine. In the judgment of the Harvard investigators, who examined families over long periods in which the use of nickel utensils was carried to the

1. Drinker, K. R.; Fairhall, L. T.; Bay, G. B., and Drinker, C. K.: The Hygienic Significance of Nickel, J. Indust. Hyg. **6**:308 (Dec.) 1924.

extreme of practical possibilities, the maximum concentration of the element found in the urine is too small to be a possible source of kidney damage. Whatever the amount escaping in the feces, there is little tendency toward urinary excretion of nickel. Consequently, the latest American investigators are in agreement with a large group of foreign students of the subject, who maintain that the preparation of food in nickel utensils need not be regarded as an unsafe procedure or practice.

THE WHEAT PLANT IN NUTRITION

Nearly twenty years ago, a group of investigators at the University of Wisconsin began a series of studies on nutrition that presently became responsible for many important contributions to the subject. They promptly showed the inadequacy of the theories on which the conceptions then current of the so-called "balanced ration" were based. Animals were furnished with the proper quota and proportions of digestible protein, carbohydrate and fat prescribed according to the standards of the time. The only apparent variable consisted in the circumstance that in varied trials the rations, alike so far as could be determined by chemical analysis, were derived from different plant sources. Comparisons were made between the cereals wheat, corn and oats. It presently became apparent that the wheat plant ration was attended with nutritive failure, in contrast with comparative success when corn products represented the food ingredients. The outcome showed the inadequacy of the prevailing theories of nutrition without affording an obvious explanation of the serious physical handicaps of the wheat-fed group. The hypothesis was formulated that the wheat plant ration was ineffective for complete nutrition, owing to an inadequate mineral content and to the presence of a toxic factor in the wheat grain. This tentative conclusion was seemingly at variance with the fact that wheat products have long entered extensively into use in human nutrition. Nevertheless, it was disconcerting to realize that wheat products might not be without some elements of harm. Meanwhile, the importance of the vitamins and the mineral make-up of the regimen has gradually been brought to light; and this knowledge, showing that wheat is poor in vitamin A and calcium, has permitted the repetition of the older wheat feeding tests under more favorable conditions.[1] It has thus become apparent from data accumulated with fuller knowledge of the factors of nutrition that the wheat plant ration can be made nutritively complete by specific additions that make good its deficiencies. This being the case, it does not seem necessary to assume the presence of an inherent toxic factor in the wheat grain in explanation of the nutritive failure following the use of a ration made wholly from the wheat plant. The outcome is gratifying because it takes from our most important cereal plant an odium that it has unjustly borne for several years. It is instructive as an illustration of the far-reaching effect of attention to minute details in nutrition. It is inspiring as an example of how scientists of the highest type may be among the first to correct their own errors and proclaim the result.

1. Hart, E. B.; Steenbock, H.; Humphrey, G. C., and Hulce, R. S.: New Observations and a Reinterpretation of Old Observations on the Nutritive Value of the Wheat Plant, J. Biol. Chem. 62:315 (Dec.) 1924.

THE BACTERIOLOGY OF HUMAN MILK

The importance of breast feeding in the nutrition of infants is so firmly established as a doctrine of pediatric practice that it requires no arguments to justify its high repute. In case of misfortune that deprives the baby of its own mother's milk, the best substitute appears to be the milk of some other healthy woman. The wetnurse long filled a beneficent rôle, and of late the product of the human mammary gland has begun to serve in more impersonal relations. Hoobler[1] of Detroit has recently contended that the commercial production of human milk and its distribution in containers direct to the home have passed through the experimental stage; in other words, breast milk is destined to become a purchasable commodity, and delivering it is likely to become a recognized occupation for many mothers. Encouragement is being offered in various communities. In view of the impending situation, it appears almost inevitable that renewed attention will be directed to the composition and quality of human milk. The chemical make-up, subject as it is to wide variations that are not always easily controlled or explained, has long been a problem for examination. Of the possible microbial content, on the other hand, far less information seems to be at hand. A bacteriologic investigation made in London by Dudgeon and Jewesbury[2] on the breast milk of 100 women disclosed streptococci in half of the samples obtained. Only 2 per cent. of these organisms were hemolytic. They were not associated with any apparent abnormal condition in mothers or infants; nor was there evidence that the presence of streptococci in human milk is an indication of a pathologic process in the breast, although the number of streptococci present in milks with a high polymorphonuclear count was greater than in normal milk. *Bacillus coli* strains were isolated from several cases without evidence of ill health in the infants fed on the milks containing them. Dudgeon and Jewesburg assert that normal human milk may contain *Staphylococcus albus, Staphylococcus aureus,* streptococci or *Bacillus coli.* The commonest is *Staphylococcus albus,* which may be associated with one or more of the bacteria referred to. The most important organism in samples of milk from cases of mastitis, suppurative mastitis, and those in which polymorphonuclears are numerous, was *Staphylococcus aureus.* The bacteriologic flora of an infant's feces may serve as a definite indication of the bacterial content of the mother's milk. Such information does not militate in any way against the use of breast milk. It may, however, awaken a realization that infection of the infant from the mother's milk may now and then be a greater possibility than has been believed.

1. Hoobler, B. R.: Human Milk: Its Commercial Production and Distribution, J. A. M. A. 84:165 (Jan. 17) 1925.
2. Dudgeon, L. S., and Jewesbury, R. C.: The Bacteriology of Human Milk, J. Hyg. 23:164 (Sept.) 1924.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest: such as relate to society activities, new hospitals, education, public health, etc.)

ARKANSAS

State Board Election.—At a meeting of the state board of health, February 17, Little Rock, Dr. Elam H. Stevenson, Fort Smith, was elected president and Dr. Andrew S. Gregg, Fayetteville, vice president.

Millage Tax for Medical School.—A bill was introduced in the senate, February 19, proposing a millage tax for the support and maintenance of the University of Arkansas Medical Department, Little Rock. The tax proposed was two tenths of a mill on the assessed value of both real and personal property in the state. The medical school is the only state educational institution, it is said, for which a millage tax is not levied.

Legislation to License Individual Practitioners.—A special bill introduced by Senator Watson, which would have licensed J. L. Merrill to practice medicine and surgery in Arkansas, was returned to the senate by the governor unsigned. An attempt will be made, it is reported, to pass the bill over the governor's veto. Several similar bills are pending before the assembly; one recently introduced in the house would license W. R. Blackwood of Newton County to practice medicine. It is expected that the governor will veto all such special bills. In vetoing the Watson bill, he said:

> The laws of our state provide for the manner of licensing persons to practice medicine, setting out certain requirements. The purpose of the general laws on this subject is to keep the standard of the profession high. Without reference to personalities, it is my view that all persons desiring to follow professions regulated by general laws should follow the procedure provided by such laws.

CALIFORNIA

"Radio Doctor" Arrested.—Albert Carter, a special agent of the state board of medical examiners, raided the Caldwell Health Home, 1416 Pepper Avenue, Pasadena, January 19, in search of P. E. McCollough, self-styled "radio doctor," charged with practicing medicine without a license. McCollough, who surrendered the following day, it is reported, formerly practiced "radio healing" at the Lindlahr Sanatorium, Chicago. Carter found a nude patient in the backyard, whose body was connected by wires to a radio machine stuffed with wax. There was a high board fence around the yard. Bail for McCollough was fixed at $500 when the justice issued a warrant to bring him to court.

Licenses Revoked.—At the regular meeting of the state board of medical examiners, Los Angeles, February 10-11, licenses were revoked as follows:

Stuart N. Coleman, Stockton. Based on federal narcotic conviction.
Leon Hurwitz, Joplin, Mo. Based on federal narcotic conviction.
Peter J. McGrath, Los Angeles.
James W. Richards. Based on violation of state poison law regarding narcotics.
Gertrude Steele, Los Angeles. For practicing in violation of the limitation of her certificate.

The petition of Charles E. Marsh for the restoration of his naturopathic certificate, which was revoked Feb. 15, 1922, was granted. At the request of Dr. Charles R. Elliott, the penalty imposed on him in 1923 (revocation) was reconsidered, and Dr. Elliott was placed on probation for a period of five years.

COLORADO

Psychopathic Hospital Opens.—The Psychopathic Hospital of the University of Colorado, Denver, was opened to receive patients, February 16. The outpatient clinic will begin functioning early in March; there is a large waiting list. Dr. Franklin G. Ebaugh, professor of psychiatry, University of Colorado School of Medicine, is director of the hospital.

DISTRICT OF COLUMBIA

Chiropractic Teachers in Pest House.—Application for writs of habeas corpus having been denied by Justice Stafford in the Circuit Court for the District of Columbia, four persons exposed to smallpox are now detained in the pest house under quarantine laws of the District. They have refused heretofore to submit to vaccination on the demand of Dr. William C. Fowler, health officer. The petitioners for writs of habeas corpus were Alonzo B. Chatfield, president of the Chiropractic Research University of Washington; his wife, Mrs. Hattie Chatfield; Blanche DeWolfe, and Harry B. Cosper, instructors at the school. They were removed to the pest house after health department physicians had diagnosed the ailment of a tenant in the same building as smallpox. In the same neighborhood, seven cases of smallpox have recently been found. The petitioners charge that their detention is unlawful since they were not suffering from smallpox. The answer of the district health department was that they were exposed to infection and that they were required under the District laws to be vaccinated. Several deaths have recently occurred in Washington due to smallpox.

IDAHO

Osteopathic Bill.—The osteopaths have introduced a bill into the legislature which, if enacted, would provide that licensed osteopaths may act as health officers and serve as heads of county and city hospitals and be permitted to treat patients in all hospitals maintained by public taxes or public subscription. This bill further provides for an attendance in osteopathic schools of thirty-six months before graduation, and specifies the number of hours to be given to each subject.

ILLINOIS

"Herb Doctors" Not Allowed to Practice.—Under a decision handed down by the appellate court of the fourth district at Mount Vernon, February 9, "herb doctors" are not allowed to practice in Illinois. The decision was given, it is reported, in affirming the conviction of one George F. Mash in the Perry County Circuit Court following the death of one of his patients. Mash was fined $200.

Smallpox in Illinois.—More than six times as many cases of smallpox have been reported in this state during the present year as were reported for the same period last year, the number of cases being 525 and 83, respectively. The most persistent foci, says the state department of health, are in St. Clair and Madison counties, where outbreaks are confined largely to East St. Louis and Alton. About ten cases at Northwestern University, Evanston, recently led to the issue of a general vaccination order affecting the student body

Local Health Service.—There are in this state 2,717 separate health jurisdisdictions, of which 1,623 are townships, and 1,094 incorporated cities and villages. In the sixteen counties not under township organization, the board of county commissioners acts as a board of health. In this total of 2,717, there are only 430 in which the health officer is a physician; in the remainder, laymen act as health officers, by cirtue of their positions as village clerks or township supervisors; and of the 430 physicians who are health officers, only eight devote their entire time to duties of their office, the remainder are, according to the director of public health, practitioners who are usually paid a small salary and can afford to devote only a small part of their time to their public work. The law enabling cities and villages to appoint a board of health was passed in 1872, and the law creating township boards of health in 1901.

Chicago

Three Cases of Leprosy.—Three cases of leprosy have been reported along the North Shore, the latest victim being a former sergeant in the army who served in the Philippine Islands. He is at the Veterans' Hospital, Great Lakes Naval Training Station, and will be sent to the leprosy colony in Louisiana. The others were Zezus Barrentas and his brother Augustine of North Chicago.

Memorial Service to Dr. Norman Bridge.—A funeral service for Dr. Norman Bridge will be held in Chicago at 2 o'clock, Saturday, March 7, in the Universalist Church, Dorchester Avenue and the Midway. The service will be conducted by the pastor of the church, assisted by the pastor of the Universalist Church of the Redeemer, of which Dr. Bridge was a member. Brief remarks will be made by President Burton, of the University of Chicago, and by Dr. James B. Herrick.

INDIANA

Hospital News.—St. Anthony's Hospital, Michigan City, will start a drive for funds for the $300,000 addition now under construction. Mrs. Howard Spalding, Chicago, has offered this hospital $100,000, on condition that a like amount be raised by popular subscription.

Chiropractic Bill Killed.—The De Haven bill was killed by an overwhelming vote in the house, February 18, after its author, "completely baffled, thwarted and beaten at every turn in his effort to keep the chiropractors from coming under the jurisdiction of the state board of medical registration," introduced a motion to strike out the bill's enacting clause.

Tuberculosis Society Meeting.—At the fourteenth annual conference of the Indiana Tuberculosis Society, Indianapolis, February 20, Dr. Frank A. Priest, Marion, was elected president; Dr. St. Clair Darden, South Bend, vice president, and Dr. Alfred Henry, Indianapolis, treasurer. Among the directors elected were Dr. Gardner C. Johnson, Evansville; Dr. Schuyler F. Teaford, Paoli, and Dr. Daniel W. Weaver, Greensburg. Dr. Charles J. Hatfield, managing director, Henry Phipps Institute for the Study, Treatment and Prevention of Tuberculosis, Philadelphia, and president of the National Tuberculosis Association, spoke. Dr. Eric A. Crull, superintendent of the Irene Byron Sanatorium, Fort Wayne, conducted a clinic. Dr. Edward M. Glaser, Brookville, spoke on "Obstacles in the Early Diagnosis of Tuberculosis." Senator C. Oliver Holmes, president of the Indiana Tuberculosis Society, presided at the banquet, February 19.

IOWA

Society News.—Graham Lusk, Ph.D., professor of physiology, Cornell University Medical College, New York, addressed the Des Moines Academy of Medicine, February 25, on "Problems in Metabolism."

Deprived of Right to Practice.—It is reported that by order of Judge Walker, Dr. Byron N. Gantz, Fairfield, was deprived of his right to practice medicine for one year, and that he was recently fined $2,000 for violation of the Harrison Narcotic Law.

State University Medical Library.—At the request of the medical faculty, University of Iowa, the collections of books covering the medical sciences, have been consolidated into a single medical library and housed in what was formerly the old chemistry building. An extensive addition has been made to this collection in the library of the late Dr. Pick, psychiatrist of Prague. This collection numbering more than 6,000 volumes, pertaining to neurology, psychology and psychiatry, has been purchased en bloc. A new medical laboratories building is being constructed, which will provide space for a library of 75,000 volumes and have a seating capacity in the reading room of 100. Special cubicles are being built in the stacks to accommodate persons doing extensive research in the library. The library at present contains about 6,800 bound journals and 4,500 books.

KANSAS

State Board Confirmed.—The governor's appointees to the state board of health, as noted in THE JOURNAL last week, were confirmed by the senate, with the exception of Dr. Richard C. Young, Arkansas City, who declined the appointment. Dr. Arthur E. Hertzler, Halstead, was appointed in place of Dr. Young.

LOUISIANA

Tuberculosis Society Meeting.—The Tuberculosis and Public Health Association of Louisiana held its first annual meeting, January 28, in New Orleans. Dr. William H. Seemann is president of the association for 1925 and Dr. Hector E. Bernados, vice president. The members of the association attended the clinic in the Breaux Memorial Tuberculosis Pavilion of the Charity Hospital which was arranged by the medical committee.

Hospital News.—The Presbyterian Hospital of New Orleans, charity service department, has issued an appeal for gifts for its free clinic. During the last calendar year the Corinne Casanas Free Clinic for the Poor treated 7,600 patients, 1,500 of whom were given prescriptions free or at cost; made 590 free pathologic examinations and 135 free roentgen examinations, and admitted 180 free patients to beds in the main hospital. Presbyterian Hospital is in its eighteenth year. The chief bequest during the last year was that of the late Mrs. Alexina S. McBurney, who willed property in New Orleans estimated at a value of $250,000 and holdings in Canada valued at $150,000. When this has been formally turned over, the hospital's assets will exceed a million dollars.

Memorial to Dr. Isadore Dyer.—During the meeting of the Southern Medical Association, Nov. 24-27, 1924, there was unveiled at Tulane University a tablet to Dr. Isadore Dyer, who for many years was dean of the university. The tablet bears the following inscription:

DR. ISADORE DYER
Nov. 2, 1865-Oct. 12, 1920
Ph.B. (Yale) 1887
M.D. (Tulane) 1889
Lecturer on Dermatology, 1892-1905; Associate Professor of Dermatology, 1905-1907, Professor of Dermatology, and
DEAN
Tulane Medical Faculty
Tulane University of Louisiana, 1908-1920
Professor of Diseases of the Skin, 1893-1907, and Secretary, 1895-1905, of the New Orleans Polyclinic (present Graduate School of Medicine Tulane University)
Visiting Dermatologist, New Orleans Charity Hospital, 1892-1920
Consulting Dermatologist, Ear, Nose and Throat Hospital, 1893-1920
One of Its Founders, and Secretary, New Orleans Sanitarium and Training School for Nurses, 1893-1905
Founder and President of the First Board of Directors of the Louisiana Leper Home, 1894
Coeditor New Orleans Medical and Surgical Journal, 1896-1920, and of the American Journal of Tropical Diseases, 1913-1916
Colonel M. R. C., U. S. A., 1919
In memory of his thirty years of service to his Alma Mater, his profession, his community and humanity, his colleagues, pupils and friends have erected this tablet, in respectful and loving tribute
Memoria bene reditae vitae sempiterna

Dr. Rudolph Matas, New Orleans, delivered a just and beautiful appreciation of Dr. Dyer. This address was published in the *Southern Medical Journal*, January, 1925.

MARYLAND

Dr. Cushny to Lecture.—The Charles E. Dohme Memorial lectures for 1925 at the Johns Hopkins University Medical School, May 8-11, will be given by Dr. Arthur R. Cushny, professor of pharmacology, University of Edinburgh. The subject will be "Optical Isomers in Biology."

Wilmer Institute Presented to Johns Hopkins.—Henry Breckinridge, secretary-treasurer of the Wilmer Foundation, formally presented to Johns Hopkins University the Wilmer Institute, at the Commemoration Day Exercises of the university, February 23. Mr. Breckinridge gave Dr. William H. Welch, director, Johns Hopkins School of Hygiene and Public Health, credit for obtaining the necessary funds, and Judge Henry D. Harlan, president, board of trustees, Johns Hopkins Hospital, accepted the institute on behalf of the university. The presentation to the university of the Walter Hines Page Memorial School of International Relations by Owen Young was another event of the day.

Society News.—Dr. Gabriel F. Tucker and Dr. William F. Moore of the bronchoscopic clinic, University Hospital, Philadelphia, addressed a joint meeting of the Baltimore City Medical Society and the Section on Otolaryngology, February 6, on the bronchoscopic treatment of suppurative diseases of the lungs and of asthma. The addresses were illustrated with lantern slides and moving pictures. Following the meeting a buffet supper was served.——At the meeting of the Baltimore City Medical Society, February 20, Dr. Maude E. S. Abbott, professor of pathology and bacteriology, Women's Medical College of Pennsylvania, Philadelphia, and assistant professor of medical research, McGill University Faculty of Medicine, Montreal, gave an illustrated lecture on "Clinical Classification of Congenital Cardiac Disease."——At a meeting of the Book and Journal Club of the Medical and Chirurgical Faculty of Maryland, February 25, Dr. John Ruhrah spoke on "The Pediatric Incunabula"; Dr. Walter D. Wise on "Dr. Alexander Hamilton, of Annapolis, and His 'Itinerarium,' 1744," and Dr. Moses L. Breitstein on "The History of the Anatomy of the Ear."——Dr. Abraham A. Brill, New York, addressed the Baltimore City Medical Society recently on "Psychanalysis and Psychiatry."

Rules for Admitting Students to Johns Hopkins.—Following the proposal of the president of Johns Hopkins University to reserve that school primarily for advanced learning, changes have been made in the method of admitting medical students. These entail the selection hereafter only of "Grade A" candidates by means of individual study of those who apply for admission. The immediate results expected will be a decrease in the number permitted to form a class, and a calmer, less apprehensive devotion to studies by first year students. Sometime ago, classes at the school of medicine were limited to ninety and subsequently to seventy-five. Under the new rules it is estimated that classes will number fifty-five or sixty, although seventy-five will be accepted if

that number of "Grade A" students applies. The changes apply to freshmen of next year, who are being selected now. The new regulations prescribe that the prospective student of medicine must submit to the dean a photograph of himself, a statement of from 150 to 300 words in his handwriting about his activities in college, and the names of two teachers of premedical sciences under whom he studied. If the applicant lives within 200 miles of Baltimore, he must arrange an appointment with the assistant dean and present his application in person. If his home is more than 200 miles from Baltimore, he will be instructed to arrange an appointment with a designated regional representative of the admissions committee, who will send to the dean his opinion as to whether the applicant is the type that Johns Hopkins should admit.

MASSACHUSETTS

Sunday Afternoon Lectures.—Additional free public Sunday afternoon lectures will be given at the Harvard University Medical School of Boston as follows (THE JOURNAL, Feb. 14, p. 522):

Dr. William H. Robey, March 22, "The Hygiene of the Heart."
Dr. William C. Quinby, March 29, "Disturbances of Urination in Men" (to men only).
Dr. Charles MacFie Campbell, April 5, "Belief and Delusion."
Mr. Norman W. Fradd, April 19, "Posture, Exercise and Health."
Dr. Franklin S. Newell, April 26, "Modern Obstetrics" (to women only).

Hearing on Chiropractic Bill.—At the hearing on the bill to legalize chiropractic and create a chiropractic board of examiners in Massachusetts, the attorney for the chiropractors argued that chiropractors do not practice medicine and have no relation to the ordinary work of physicians. Later his clients recounted hundreds of cases of pneumonia and other diseases treated by themselves, and testified that appendicitis could be cured quickly by spinal adjustment. A protest against this bill was filed by Dr. Enos H. Bigelow, in behalf of the joint committee of the medical societies, and Dr. Charles E. Mongan made a plea for one standard in medical education and practice.

MICHIGAN

Mrs. Patrovich Fined.—Mrs. Stephen Patrovich, Monroe, whose treatment for cancer was noted in THE JOURNAL, February 21, pleaded guilty in the Lenawee circuit court to a charge of practicing medicine without a license and was fined $200 and costs. The court, it is reported, withheld a jail sentence on the defendant's promise to undertake no more "treatments."

Personal.—Dr. Burton R. Corbus, Grand Rapids, has been elected chief of staff of the Butterworth Hospital, and Dr. Frederick C. Warnshuis, vice chief.——Dr. Carlon R. Hills, Ann Arbor, has been elected medical superintendent of the Calhoun County Hospital.——Dr. Richard C. Cabot, professor of clinical medicine, Harvard University Medical School, Boston, will be the principal speaker at the annual honors convocation, University of Michigan, Ann Arbor, April 24. The honors convocation, inaugurated last year, is held to honor the outstanding members of the graduating class.——Dr. Eugene R. Elzinga has been appointed city physician of Flint, to succeed Dr. John H. Curtin, who resigned, February 1.

MISSOURI

Medical Whisky in St. Louis.—The state prohibition director announced, February 21, that 81,250 gallons of medical whisky were consumed in St. Louis in 1924. The total number of prescriptions issued was about 650,000. About 2,000 physicians in St. Louis have liquor prescription permits.

Society News.—George A. Soper, Ph.D., managing director, American Society for the Control of Cancer, New York, addressed the St. Louis Medical Society, February 10, on "Methods and Results of Efforts to Control Cancer by Education," and Dr. Harry Gideon Wells, professor of pathology, University of Chicago, on "The Modern Conception of the Cancer Problem."——Dr. Harry G. Greditzer addressed the St. Louis Medical Society, February 24, on "Giant Calculus of the Kidney"; Dr. Richard J. Payne on "Intranasal Operation for Retrobulbar Abscess"; Dr. Eugene R. Van Meter on "Intranasal Application of Radium for New Growths."——Dr. Bethuel B. Vincent Lyon, Philadelphia, addressed the St. Louis Medical Society, March 3, on "What Shall We Do With and For Gall Tract Cases."

NEBRASKA

Smallpox at University.—Followinging the announcement that a student in the pharmacy department had smallpox, about 400 students and members of the faculty at the State University of Nebraska, Lincoln, were vaccinated, February 18.

NEW JERSEY

Mosquito Control.—There are more than 5,000 miles of drainage ditches, calculated on the basis of 10 inches in width, in New Jersey, more than 1,500,000 feet of which were cut in 1924. About 20,000 feet of new dikes were constructed. The total expenditure in mosquito control work was $330,000. According to the executive secretary of the Hudson County Mosquito Extermination Commission, there were practically no mosquitoes last summer in several of the ten counties annually engaged in this work.

NEW YORK

Chiropractor Held.—Joseph Viscardi, a chiropractor, was held in $300 bail, February 20, for special sessions in Yorkville court, on a charge of practicing medicine without a license. One of Viscardi's patients happened to be a policewoman.

Sale of Tetra-Ethyl Lead.—The department of health has adopted the following addition to the Sanitary Code, Chapter VII:

The sale or distribution of tetra-ethyl lead in concentrated form, except to refineries, bulk stations or filling stations, is hereby prohibited. Such sale or distribution shall be made in safe, sealed containers. Nothing herein contained shall be construed to prevent the sale or distribution of tetra-ethyl lead in concentrated form for experimental or research purposes, or for use under special circumstances to persons whose applications therefor have been approved by the commissioner of health of the state of New York.

Dinner to Dr. Mosher.—A dinner will be tendered Dr. Eliza M. Mosher, Brooklyn, at the Hotel Roosevelt, March 25, to celebrate Dr. Mosher's fiftieth year in the field of medicine. About fifty organizations will be represented, among them the University of Michigan, the Brooklyn Chamber of Commerce, the Women's Club of New York and the Brooklyn Women's Club. Dr. Mosher was formerly dean of women at the University of Michigan, professor of physiology at Vassar and a lecturer at Wellesley and Adelphi colleges. Among the speakers will be Senator Royal S. Copeland, Dr. Joseph E. Raycroft, Dr. John E. Jennings, H. Noble MacCracken, Ph.D., president of Vassar College, and Dr. Esther Lovejoy. Tickets may be obtained from Mrs. Edward H. Cross, 140 West Fifty-Fifth Street, New York.

New York City

Court Decides Health Employees Were Unauthorized.—The appellate division of the supreme court handed down a decision, February 20, in a suit brought by the president of the Civil Service Reform Association, to the effect that the employment of clerks, physicians, nurses, inspectors and others, numbering 169, by the board of health was unauthorized. The court refused an injunction against paying the salaries of these employees because their employment had terminated, but held an injunction would be issuable in case there is any "threat" of similar action by the board of health in the future.

Personal.—Dr. Joseph F. Saphir has been appointed attending proctologist to the Jewish Maternity Hospital.——Dr. George W. Crile of Cleveland addressed the Flatbush Medical Society, February 13.——Dr. Herman Shann has been appointed consulting surgeon to the Williamsburg Maternity Hospital, Brooklyn.——Dr. Hannah M. Stone has been appointed assistant medical director of the clinical research department of the American Birth Control League to succeed Dr. Dorothy Bocker.——P. Debye, professor of theoretical physics, University of Zurich, addressed the scientific staff of the Rockefeller Institute for Medical Research, February 26, on "Hydration and Neutral Salt Action."——Dr. William B. Coley has been appointed surgeon in chief to the Hospital for the Ruptured and Crippled, to succeed Dr. Virgil P. Gibney, who has been made surgeon in chief emeritus after a continuous service of fifty-three years.

NORTH CAROLINA

Sanitary Inspection of Executive Mansion.—At the request of the governor, the executive mansion at Raleigh has been subjected to a sanitary inspection by the state board of health, which gave the residence a rating of 70, or 5 points below

the minimum hotel rating in the state. The legislature has been requested to make an appropriation to put the building in first class condition.

Tuberculous Convicts Escape.—Seven patients in the tuberculosis service of the state penitentiary at Raleigh escaped last week through an opening in the roof, descending successfully the four stories of brick wall between the ward where active tuberculosis patients are detained and the ground below. Five were subsequently captured before getting out of the city.

OHIO

Educational Conference.—The fifth annual Ohio State Educational Conference will be held at Columbus, April 2-4, the keynote of which will be "Democracy in Education." In addition to three general meetings, there will be twenty-six sectional meetings on Friday, at nearly all of which at least one specialist from outside the state will speak.

Hospital News.—The contract has been let for the construction of the $350,000 Clark County Tuberculosis Hospital, which it is expected will be ready for occupancy by February, 1926.——Dr. Roy H. McKay, January 23, was elected chief of staff of the Peoples Hospital, Akron; Dr. David H. Morgan, assistant chief, and Dr. M. C. Tuholske, secretary. ——At a recent meeting of the board of trustees of Robinwood Hospital, Toledo, Drs. Ernest W. Campbell, Reed O. Brigham, Henry D. Brown and Edward P. Gillette were elected to the staff.——The new maternity hospital of the Western Reserve University group, Cleveland, will be opened next October.

OKLAHOMA

Oklahoma City's Health Program.—An efficient health program is being enacted at Oklahoma City through the cooperation of the public health committee of the chamber of commerce and the regularly constituted health agencies. First among the accomplishments is the Oklahoma County health unit, which is one of only seven county health units in the state. The unit is cooperative, receiving $2,500 for support the first year from the U. S. Public Health Service, and a like amount from the State of Oklahoma and the Tuberculosis Society of Oklahoma City, and $1,800 from Oklahoma County. The personnel consists of a full-time health officer (Dr. George Hunter), a public health nurse, a sanitary inspector and a clerk. The Oklahoma City Health Department has been reorganized by the creation of a board of health under the control of the commissioner of public safety. The preventive work of this department has been placed in the hands of a full-time physician (Dr. W. H. Miles) with the title of city health officer. Special committees of the public health committee have been formed and plans laid to cover various fields in preventive medicine. A "Milk for Health" campaign will be conducted late in March by the milk supply subcommittee, and a thorough cleanup campaign for the entire city in the early spring by the sanitation subcommittee. The sewage disposal subcommittee is studying the possibilities of converting Deep Fork and the North Canadian River into unpolluted streams. The subcommittee appointed to deal with industrial health work has organized a speakers' bureau, which is presenting to 4,000 employees of cooperating firms information on accident prevention, first aid, personal hygiene, diet, and hospital facilities. Industrial health work has been practically nonexistent in Oklahoma City heretofore. In response to a questionnaire by the subcommittee, forty firms agreed to cooperate whereas only twenty-two were not in a position to do so. The work of the public health committee of Oklahoma City, whose chairman is Rev. Newton H. Royer, has received favorable comment from national agencies, and various cities have requested information about its organization.

OREGON

State Board of Health Officers.—At the annual meeting of the state board of health, Portland, January 14, Dr. Charles M. Barbee, Portland, was elected president; Dr. William T. Phy, Hot Lake, vice president, and Dr. Frederick D. Stricker, Portland, secretary and state health officer.

Conference with Canners' Association.—Representatives of the state boards of health of Oregon, Washington and California met at Portland, January 8, with representatives of the Northwest Canners' Association to consider the question of standardizing the manufacturing and canning processes in order to eliminate the danger of botulism.

PENNSYLVANIA

Institute for Tuberculosis Workers.—A regional institute for tuberculosis workers will be held in Philadelphia, March 25-April 8, under the auspices of the National Tuberculosis Association and the Pennsylvania School of Social and Health Work, in cooperation with various tuberculosis organizations. The object will be to give workers an opportunity for study of methods of education and organization in this field. The director will be Dr. Harvey D. Brown, and among the speakers will be Philip P. Jacobs, Ph.D., publicity director of the National Tuberculosis Association, Dr. Charles J. Hatfield and Dr. Harry A. Pattison. There will be twenty-seven half day sessions, for which a charge of $10 per student will be made. The number of students will be limited to thirty.

Osteopathic Bill Amendments.—After a hearing on amendments to the osteopathic bill, February 24, the senate public health and sanitation committee announced it would postpone action on the measure. The proposed amendments would have the state osteopathic surgeons' examining board composed only of osteopaths, while at present the board has two members appointed by the board of medical education and licensure. Representatives of the Medical Society of the State of Pennsylvania opposed the amendments, asserting that provision for the two members representing the medical profession was agreed to when clarifying amendments to the law were passed in 1923.

Society News.—The postgraduate lecture of the Allegheny County Medical Society, February 19, was delivered by Dr. Paul Titus, Pittsburgh, on "Toxemias of Pregnancy—General Management and Treatment."——Dr. J. Parsons Schaeffer, professor of anatomy, Jefferson Medical College, Philadelphia, addressed the Lycoming County Medical Society, Williamsport, February 13, on "Morphological and Anatomical Variation in Symptomatology, Diagnosis and Treatment." ——Dr. Truman G. Schnabel, associate in medicine, University of Pennsylvania School of Medicine, Philadelphia, addressed the Berks County Medical Society, Reading, February 10, on "The Practical Value of Blood Chemistry." ——At a meeting of the Cambria County Medical Society, January 8, Dr. Albert J. Guerinot, Pittsburgh, gave an address on "Foreign Bodies in the Air and Food Passages," and Dr. Joseph H. Barach, Pittsburgh, on "Modern Treatment of Diabetes."——Dr. Alfred Stengel, Philadelphia, delivered the postgraduate lecture before the Allegheny Medical Society at Pittsburgh, March 5.——Graham Lusk, Ph.D., professor of physiology, Cornell University Medical College, New York, delivered the Emmerling memorial lecture before the Pittsburgh Academy of Medicine, March 2, his subject being "Problems of Metabolism."——Dr. James J. Walsh, New York, will be the principal speaker at the annual dinner of the Allegheny County Medical Society, Pittsburgh, April 14.

Philadelphia

Personal.—Dr. Louis Lehrfeld has been appointed neuro-ophthalmologist to the Philadelphia General Hospital.——Dr. Mabel E. Elliott, until recently in relief work in the Near East, will go to Japan in May to become a medical missionary under the National Episcopal Mission Board.—— Dr. Ross V. Patterson, dean, Jefferson Medical College, has been reelected president of the college alumni association.—— Dr. William W. Keen, emeritus professor of the principles of surgery and of clinical surgery, Jefferson Medical College, has been elected a foreign honorary member of the Royal Academy of Medicine of Belgium.——Dr. Henry H. Perlman, instructor in children's diseases, Jefferson Medical College, has been appointed medical director, and Dr. James T. Doster, Jr., has been appointed chief resident physician of the Ocean City Seashore Home for Babies.

TENNESSEE

Bill Passed to Lower Entrance Requirements.—The senate and house of the Tennessee legislature have passed a bill that would lower the standard of requirements for entrance to the medical department of the state university. This bill provides, in part, that the department of education may not require or recommend standards of preliminary education of persons desiring to practice medicine, surgery, osteopathy, or any other form of the healing art in the state of Tennessee higher than the requirement of a diploma from some reputable four year high school. From late accounts,

the governor had not yet signed this bill, and protests were being received from civic as well as medical societies from many parts of the state.

TEXAS

New Board of Medical Examiners.—The new state board of medical examiners, appointed by Governor Ferguson, consists of Drs. Will Cantrell, Greenville; John H. McLean, Fort Worth; James M. Witt, Waco; J. H. Pittman, Temple; Guy P. Sherrill, Temple; Horace C. Morrow, Austin; J. M. Watkins, Luling; M. E. Daniel, Honey Grove, and Thomas J. Crowe, Dallas.

WASHINGTON

Bill to Revoke Licenses Passed.—After a heated, and at times humorous, debate in the house, the senate bill providing for the revocation of fraudulent licenses issued under the Drugless Healers Act was passed by a vote of 84 to 12. More than 150 sanipractors are affected by this measure.——The appropriation for the department of licenses for investigations in the field was raised from $17,500 to $28,000. This will enable the department to increase the pressure against medical frauds and fakers.

WEST VIRGINIA

"Professor" Guarascio Held.—Charged with sending first-class mail as third class, Joseph Guarascio, Fairmont, is being held under bond for the next term of the grand jury, which meets in Parkersburg. "Professor" Guarascio advertises himself, says the *West Virginia Medical Journal*, as a "suggestive magnetic healer." He recently was fined $300 in the Marion County Court for practicing medicine without a license.

Supreme Court Holds that Chiropractic is the Practice of Medicine.—In the first chiropractic case that reached the supreme court in this state, a decision was handed down, February 24, in the case of the appeal of E. E. Morrison, a chiropractor found guilty in the Raleigh County court of practicing medicine without a license and fined. The supreme court affirmed the lower court's judgment and held that chiropractors must pass a state medical examination before they can treat patients, and that under the laws of West Virginia the chiropractic method of treatment for human ailments is practicing medicine and surgery.

WISCONSIN

Personal.—Drs. Jerome R. Head, Robert E. Burns and Volney B. Hyslop have been appointed resident physicians at the new Wisconsin General Hospital, Madison, and Dr. Benjamin H. Hager, Madison, associate professor of surgery. ——Dr. Leonard E. Spencer, Wausau, for many years deputy state health officer, has resigned to engage in private practice. ——Dr. Joseph Dean, Madison, was appointed a member of the state board of health for a seven-year term, ending in 1932, to succeed Dr. William E. Whyte, Madison, resigned.

Lay Education Campaign.—In a campaign to instruct laymen, the State Medical Society of Wisconsin presented more than 250 subscriptions to *Hygeia* to public officials and other prominent persons during the last holiday season.——Copies of the second annual lay issue of the *Wisconsin Medical Journal*, another feature of the educational campaign, were forwarded to all members of the state legislature, all state officials, district attorneys, county, circuit and supreme court judges, high school, normal school, county training school and vocational school libraries, to all officers of clubs in the Wisconsin Federation of Women's Clubs, to lay public health workers and to the editors of all newspapers in the state. About 2,500 journals were sent to laymen whose names were suggested by members of the medical society.

GENERAL

Editor Honored.—The January issue of the *Annals of Surgery* is a commemorative number in honor of its editor, Dr. Lewis Stephen Pilcher, who has completed forty consecutive years of editorial labor in the development and conduct of this journal. This issue contains, besides an unusual number of contributions, the story of the development of this journal by the editor.

International Birth Control Conference.—The Sixth International Neo-Malthusian and Birth Control Conference will be held at the Hotel McAlpin, New York, March 25-31, under the presidency of C. V. Drysdale, London. Among those scheduled to speak are Dr. Adolph Meyer of Johns Hopkins University Medical Department; Raymond Pearl, Ph.D., of Johns Hopkins University; Edward M. East, Ph.D., Harvard University; Leon J. Cole, Ph.D., University of Wisconsin, and Clarence C. Little, Sc.D., president of the University of Maine. The previous international conferences were held in Paris, 1901; Liége, 1905; The Hague, 1910; Dresden, 1911, and London, 1922.

More Quinin for Greece.—The American Red Cross appropriated, February 20, $85,000 for the purchase of quinin to be shipped to Greece to combat the epidemic of malaria in the great refugee camps in that country. This shipment will consist of 14,000,000 5-grain quinin tablets, and is the last of a series of shipments of quinin by the Red Cross. The repatriation of about 1,000,000 Greek nationals from Asia Minor resulted unavoidably in quartering many of them in malaria districts. The liberal distribution of quinin by the American Red Cross has, according to the Greek Department of Hygiene, not only saved many lives but enabled countless other refugees to reestablish themselves.

Resolution Against Advertising "Cures."—The Association of National Advertisers recently adopted a resolution against advertising "cures" for certain diseases, which was, in part, as follows:

> WHEREAS, The executive committee of the Association of National Advertisers views with concern and regret the apparent recent increase in published advertisements of medical preparations offered as preventives of, or cures for, such diseases as tuberculosis and cancer, which are at present regarded by the best minds of the medical profession as incurable, so far as treatment with drugs is concerned, be it
>
> *Resolved*, That this Association earnestly urge all publishers for the humane protection of their readers, and also in order that general belief in advertising may not be impaired, to refrain from such dangerously misleading advertising; and be it further
>
> *Resolved*, That this Association also urge its members to exercise their influence for the discouragement of such confidence-destroying advertising.

Interstate Postgraduate Assembly Clinic Tour.—Under the direction of the Tri-State District Medical Association, a clinic tour will start from Chicago, May 17, then visit clinics in Toronto and Montreal, and sail, May 23, for Liverpool. June 1-7 will be spent in London; June 8-10 in the clinics of Manchester, Liverpool and Leeds; June 11-12 in Dublin, then Belfast, Glasgow, and on June 17 the Royal Infirmary of Edinburgh; June 20, Newcastle and the University of Durham; June 21-22, a trip through the English lake country; June 23-27 in the clinics of Paris; then to Lyons, Strasbourg and back to Paris, sailing, July 4, for Montreal or New York. The managing director of the tour is Dr. William B. Peck, Freeport, Ill. The main tour is limited to 300, and on February 13, 269 had registered. It is desired that members from "the home states" should claim the remaining thirty-one places. Those who register after the number in the main tour is filled may be with the party for the big meetings and social functions in London and Paris, but will have to accept an alternate tour from June 7 to June 21. The tour is open to members of the profession in good standing in the United States and Canada.

John Simon Guggenheim Memorial Foundation.—Simon Guggenheim, former senator from Colorado, and his wife have announced a preliminary gift of $3,000,000 for the endowment of a foundation, the purposes of which are to foster research; to improve the quality of education and the practice of the arts and professions in the United States, and to provide for the cause of better international understanding. The foundation is a memorial to the son of Senator and Mrs. Guggenheim. It offers opportunities to study in any field under the freest conditions, and differs from the Rhodes scholarships in that fellowships are intended for older students than those to whom the Rhodes scholarships are open, in being open to women as well as to men, and in being available for study in any country. No age limits are prescribed. Fellowships are open to men and women, married or unmarried, of every race, color and creed. Only those candidates will be appointed, however, who have embarked on some important work and who show exceptional aptitude for research or demonstrate ability in one or more of the fine arts. The principal obligation imposed on fellows is that they shall contribute to knowledge and make the results of their studies public. The first national awards will be made for the academic year 1926-1927. It is the purpose after the first year to maintain annually from forty to fifty fellows abroad. The amount of money available for each fellowship will be about $2,500 per year. Appointments will be made ordinarily for one year, but plans involving two or three years' study will be considered. There is a board of trustees of seven

members and an advisory board comprising a much larger number of prominent educators. The executive office of the foundation will be in charge of Mr. Henry Allen Moe, secretary of the board of trustees, and the office will be at 2300 Pershing Square Building, New York.

LATIN AMERICA

Society Election.—The Mexican Medical Association at its annual meeting, January 12, elected as president, Dr. Rosendo Amor, and as vice presidents, Drs. J. Torres Torija and Angel Brioso Vasconcelos; secretaries, C. Viesca y Lobatón, F. de P. Miranda and Ignacio Chávez; treasurer, L. Escobar, and the other members of the board, Drs. R. Cicero, G. Escalona, S. Iturbide Alvirez, P. de Alba, L. Rivero Borrel, J. García Rendón and A. Ortiz. The retiring president, Dr. F. Zárraga, was elected an honorary member. The *A. M. M.*, the organ of the association, is in charge of Dr. J. Torres Torija, assisted by Drs. I. Chávez and B. Bandera.

Charlatans in Mexico.—The *A. M. M.*, the organ of the Mexican Medical Association, reproduces the petition circulated among the physicians and pharmacists of Guadalajara urging pharmacists to refuse to make up the prescriptions of charlatans and urging physicians to refuse to patronize pharmacists who do so. All the pharmacists in the town signed the appeal as well as the local physicians. The term charlatan is defined to include chiropractors. Editorial comment hails this action as a triumph for the profession: "Without waiting for laws, without asking help from outside, our colleagues at Guadalajara have formed a solid front with this double boycott to put a 'thus far and no further' to the activity of quacks."

FOREIGN

The Leyden University Celebration.—In February the University of Leyden celebrated the three hundred and fiftieth anniversary of its foundation. When Latin was the language of science, this university attracted students from all over the world. Boerhaave and Albinus were among its medical professors, and van Swieten, Haller and de Haan among its students, while Linnæus did much of his work in botany at Leyden. The *Nederlandsch Tijdschrift voor Geneeskunde* remarked, "The black caps of the present faculty were interspersed with the colored caps of honorary degrees of foreign universities. Einthoven had the blue and red Aberdeen cap, Lorentz the violet Philadelphia cap or the ermine Sorbonne cap, and Einstein the blue Madrid cap." No honorary degrees were conferred except that Queen Wilhelmina was made a doctor of laws.

Protest Against Antivivisection in Belgium.—The Académie royale de médecine of Belgium recently adopted a resolution confirming the protest of the Liége University faculty against two bills presented in the Belgian senate which aim to abolish scientific experiments on animals. The Académie resolution stated that the "proposed bills are profoundly regrettable. The Académie reiterates that cruelty to animals should be severely condemned, and every legal measure destined to reenforce the present regulations is approved by it in the name of morals, science and social hygiene. But the Académie protests vigorously against the tendency of the bills presented, which include in one common reprobation the acts committed by inhuman and brutal persons who martyrize animals, and the experiments conducted by the professors of physiology and medicine on anesthetized animals, under control of the university authorities. . . . Any law which would prevent professors from utilizing animal demonstrations in their theoretical or practical courses would represent a grave pedagogic error, the consequences of which might be considerable. The Académie upholds the principle that the animal experimentation question cannot be considered from all sides except by those who by their daily professional experience have a clear idea of what pain represents, and of what is necessary for the progress of medical science to reduce the sum total of human suffering. It denies that the legislative authorities are competent to define the cases in which animal experimentation should or should not be used, and the manner in which such experiences should be conducted."

Deaths in Other Countries

Dr. **John Fraser**, retired commissioner, General Board of Control of Scotland, at Edinburgh, January 18, aged 79. ——Dr. **André Broca**, professor of physiotherapy, Paris, aged 62, of heart disease.

Government Services

Appointments in the Navy

Announcement has been made by Admiral Stitt, surgeon general of the navy, that fifty-eight senior medical students from Class A medical schools will be appointed in the grade of assistant surgeon with the rank of lieutenant junior grade in the medical corps of the navy. These students will be made commissioned medical officers, following the policy recently established of commissioning a limited number of graduate medical students each year to overcome the depletion of medical officers which has long existed in the navy. These commissions have been eagerly sought by medical students because the navy immediately assigns them to internships in large naval hospitals at Boston, New York, Philadelphia and elsewhere. The salaries approximate from $2,700 to $3,000 per year. With these fifty-eight officers, the maximum personnel of the medical corps will be 835, the largest number since the period of the World War. The navy will be, nevertheless, still short of the requisite number of medical officers. The remaining vacancies may be filled by qualified physicians who have had the necessary internship in civil hospitals and who can qualify for admission under the general regulations of the medical corps of the navy.

Veterans' Bureau Council Meeting

The medical council of the Veterans' Bureau convened its third meeting in Washington, February 27, and decided that further meetings are idle and attempted cooperation is futile unless Congress will pass legislation to establish a medical corps for the bureau. A bill for this purpose is pending in Congress, and a hearing was obtained before the Senate committee considering it. The following attended: Dr. Ray Lyman Wilbur, Stanford University, chairman; Col. Robert U. Patterson, Surgeon General's office, U. S. Army, Washington; Dr. Henry Kennon Dunham, Cincinnati, Ohio; Dr. Roy D. Adams, Washington; Dr. Daniel J. McCarthy, Philadelphia, and Dr. Winford H. Smith, Johns Hopkins Hospital, Baltimore. The purpose of establishing a medical corps, as recommended by the council, is to secure a permanent organization of experts to carry out the policies of the council. Brig.-Gen. Frank T. Hines, director of the Veterans' Bureau, recommended a change in policy with reference to veterans' hospitals, developing them for treatment, cure and prompt discharge of patients, "whereas under present conditions it is impossible to avoid more or less occupancy of practically domiciliary nature, which is actually a hindrance to the cure of the sick, as it tends to foster their acceptance of a condition of dependency."

U. S. Public Health Service

Promotions.—Taliaferro Clark has been promoted and commissioned in the grade of senior surgeon, effective Dec. 25, 1924, and Vance B. Murray and Robert W. Hart, promoted and commissioned in the grade of surgeon, effective July 26, 1924, and Jan. 30, 1925, respectively.——Lester C. Scully, Floyd C. Turner and Marion R. King have been promoted and commissioned in the grade of passed assistant surgeon, effective Oct. 4, Sept. 30 and Oct. 4, 1924, respectively.

Appointments.—Edwin H. Carnes, New Orleans, and Lucius F. Badger, Jr., San Luis Obispo, Calif., have been appointed and commissioned in the grade of assistant surgeon, effective Nov. 3 and Nov. 17, 1924, respectively.

Change of Duty.—Surgeon Harry F. White has been directed to investigate a report of supposed pneumonic plague in Midland, Texas.——Surgeon Walter L. Treadway has been directed to proceed to such places in Massachusetts as may be necessary from time to time in connection with studies in mental hygiene.——Surgeon George W. McCoy will hold conferences in Lansing and Detroit, Mich., relative to control of certain biologic products.

Army Personal

Col. Edward L. Munson, medical corps, who recently returned from the Philippine Islands, has reported for duty at the Presidio of San Francisco as surgeon, ninth corps area, and medical superintendent of the Army Transport Service. After the Japanese earthquake Colonel Munson was in charge of American medical relief work.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Feb. 14, 1925.

The Taungs Skull Discovery

Professor Dart of the Witwatersrand University, South Africa, has discovered a fossil skull at Taungs, 1,000 miles south of Broken Hill, Rhodesia, to which he has given the name of *Australopithecus africanus*. He believes that it fills the gap between the most primitive of men and the most advanced of apes. The Taungs individual he describes as not a human being, and yet much more intelligent than a gorilla or chimpanzee, the highest of living apes. He was unable to talk, but his brain was advanced in the direction required in an ancestor whose offspring were to attain ultimately power of communicating with their fellows by the symbolism of speech. He is therefore to be regarded, not as an apelike man, but rather as a manlike ape, and he reveals to us that period of human evolution more remote than the pithecanthropus early in the Pliocene geological epoch, or even in the Miocene, when the human stock was only very slightly advanced beyond that which led to the modern apes.

G. Elliot Smith, professor of anatomy at the University of London, states in the *Times* that the discovery supports Darwin's theory that Africa was probably the original home of the human family. It was interesting to note, he says, that the parts of the brain concerned with touch, movement, hearing and vision are just as well developed in the apes as in man; but where man is superior is in the development of those parts of the brain associated with the performance of skilled movements, with discrimination of shape and weight and size, and with the properties of objects—in short, those parts of the brain which made it possible to profit by experience.

Indian Leprosy Campaign

An appeal has been launched by Lord Reading, the viceroy of India, for funds to provide the Indian Council of the British Empire Leprosy Relief Association with the means to carry out a sustained attack on leprosy, the elimination of which is now considered possible as the result of recent medical discoveries. He pointed out that leprosy has now been proved not to be hereditary, and to be curable in its early and dangerously infective stages. A strong general committee, covering the whole of India, has been appointed. There are already indications of enthusiastic support from people of all shades of opinion. Particularly generous support is promised even by newspapers that represent non-cooperation (nationalist extremism) in politics.

Sir Leonard Rogers, the foremost authority on leprosy, states that although the last census of India recorded nearly 103,000 lepers, this figure has only a relative value, since it covers only the advanced and easily recognized cases. Dr. Ernest Muir, who has succeeded Sir Leonard in conducting researches on the disease at the Calcutta School of Tropical Medicine, thinks the numbers may be from half a million to a million if all the early cases are included. By an act passed in 1920, the government of India made it possible for all provincial governments to deal with the pauper and begging lepers, and in the provinces where suitable settlements exist some compulsory segregation is carried on. Nevertheless, on a moderate estimate there are some 40,000 pauper and begging lepers in India, constituting a serious menace. This problem is being met in the Madras Presidency by a new leper settlement for all classes of lepers, but particularly for the pauper and beggar sufferers. There are in all some seventy-three asylums in India, with an average of 100 inmates. A course of training is contemplated for all physicians who work among lepers, first at the School of Tropical Medicine at Calcutta, and later at leper institutions. Endeavor is to be made to establish outpatient skin clinics (a term held to be preferable to that of "leper hospitals") in as many of the principal towns as possible. But a central leper colony in each of the major provinces, for the treatment of the most infectious cases and for the compulsory segregation of pauper and begging lepers, is necessary.

The British Medical Association and the Hospitals

Hospitals are now passing through a transition period in which, instead of relying, as they did in the past, entirely on the contributions of the charitable, they have to depend largely on payments by patients. The British Medical Association has issued a pamphlet explaining the association's policy in the matter. Following a reference to "the general tendency now existing for the exaction of payment, however small, from the patient," and the consequent alteration in the basis of the relationship between the honorary medical staffs and the subscribers, the association says that it recognizes a dual policy as regards the voluntary hospitals; that (*a*) the purely charitable side should be continued wherein the whole cost of the maintenance of indigent patients is met by the gratuitous contributions received by the hospital and on whose behalf the services of the honorary medical staffs are given gratuitously; (*b*) other patients who are not indigent may be received for treatment at voluntary hospitals when they cannot pay for or obtain adequate treatment elsewhere, and for them payment should be received by the hospital either from the patients themselves or on their behalf from the authority or body referring them to the hospital, and on account of their treatment some method of remuneration of the honorary medical staff should be arranged. Full payment should be made for services required from a hospital by the state, such payment to include an amount for the remuneration of the hospital's honorary medical staff. Every patient who is able should make a contribution toward the cost of maintenance and medical treatment, unless the contributory method of subscription is adopted as essential in industrial areas. Greatly extended support for hospitals should be sought from employers and insurance companies, seeing that they benefit largely, both directly and indirectly, by the hospitals' services. Without approving any specific contributory scheme, the association contends that in any such scheme it is undesirable that the hospitals should provide hospital benefit in return for a periodic payment by an individual or a group of individuals. Such schemes should be organized by an independent body. Hospital patients should be classified in three categories—free, tariff and private. Free patients would be certified by an almoner as unable to contribute. Tariff patients would pay or have paid for them, in part or whole, the tariff cost of maintenance or treatment, this group including all for whom payment is made by public authorities, approved societies, employers of labor, and insurance companies, or under any contributory scheme. Private patients would pay for special accommodation, and would arrange for medical treatment fees independently of the hospital. Subject to local variations and periodic revision, the following maximal income limits are suggested for tariff patients: Class 1 (limit of income, $1,000): (*a*) single persons over 16 years of age; (*b*) widow or widower without children under 16 years of age. Class 2 (limit of income, $1,250): (*a*) married couples without children under 16 years of age; (*b*) persons with one dependent under 16 years of age. Class 3 (limit of income, $1,500): (*a*) married couples with a child or children under 16 years of age; (*b*) persons with more than one dependent under 16 years of

age. Persons whose incomes are above the agreed specified scale should be treated as private patients.

British Congress of Obstetrics and Gynecology

The fifth British congress of obstetrics and gynecology will be held in London at the Royal Society of Medicine, April 22 to 24. The first British congress of obstetrics and gynecology was held in London in 1920; subsequent congresses met in Birmingham, Liverpool and Edinburgh. The congress consists in the reunion of the various British and Irish societies devoted to the subjects of obstetrics and gynecology, and includes the Section of Obstetrics and Gynecology of the Royal Society of Medicine, the Midland Obstetric and Gynecological Society, the North of England Obstetric and Gynecological Society, the Edinburgh Obstetric Society, and the Section of Obstetrics and Gynecology of the Royal Academy of Medicine of Dublin. Next year the president of the congress will be Dr. Russell Andrews, who presides in his capacity of president of the Section of Obstetrics and Gynecology of the Royal Society of Medicine. Arrangements are being made for three days' work, which will include a discussion on the diagnosis and treatment of puerperal sepsis, expected to occupy one whole day of two sessions. This discussion will be introduced by the report of a special London committee based on more than a year's work. Another report is expected from the North of England. Other sessions will be allotted to the reading of individual communications, and to epidiascopic demonstrations on histologic subjects. In addition, a preliminary report on eclampsia will be communicated from the special eclampsia committee. Operative demonstrations will also be given at the various hospitals by their regular gynecologic surgeons. It is intended also to arrange an exhibition of pathological specimens, of which a catalogue will be prepared in advance.

The Study of Anthropology

Though British workers have been foremost in the building of the comparatively new science of anthropology, thanks are due only to the private enterprise of scientists. The government, as usual, has given little or no assistance, and the subject is regarded by the public as too recondite to be interesting. But recent correspondence in the *Times* points to an awakening to the importance of the subject—from the political standpoint, at any rate. In opening a course of lectures at University College on "The Methods and Aims of Anthropology," Prof. Elliot Smith said that the practical value to an administrator lay in the fact that a real understanding of the mind of a governed population was essential for successful government. In the light of such knowledge, it became possible to avoid unnecessary interference with native practices that constituted any people's chief interest. Such sympathetic treatment became the chief factor in promoting contentment and prosperity and in avoiding strife, which should be the chief aims of satisfactory administration. Undue interference with the customary occupations of any people was apt to create boredom, which was the obtrusive factor in causing depopulation among native races and all the political trouble arising from it. In the past, many attempts had been made in this country to promote schemes for anthropological training on an adequate scale. No useful purpose would be served by probing into the reasons for their failure. A new situation had now arisen. In South Africa and New Zealand, and now in Australia, schools of anthropology were being built up; and there was evidence of a growing interest in such studies in India and most of the British colonies. These vigorous developments in the periphery of the empire were under local control; and it became their duty at the center not to pretend to lead this great movement, but to keep in touch with it and to give such help as its leaders and fieldworkers might ask for. Thus it was more than ever advisable to build up schools of anthropology in this country and to prepare for adequate cooperation with workers in this branch of learning elsewhere. It was the aim of this course of lectures to stimulate interest in that subject. The foundation of a real science of anthropology was surely the investigation of the origin of the human family, the study of how man came into being, and the nature of the factors that determined his subsequent advancement. The steady and continuous development of the brain that made possible the emergence of man's distinctive powers of intelligence must be the central fact around which all the manifold branches of anthropological science should be grouped and linked into a coherent discipline.

JAPAN

(From Our Regular Correspondent)

Feb. 5, 1925.

Fire in St. Luke's Hospital

The main building of the St. Luke's International Hospital in Tokyo was destroyed by fire on the afternoon of January 13. The damage, amounting to 250,000 yen, is fully covered by insurance. There were in the institution at the time but five foreigners among the 110 patients, all of whom were saved. This hospital was completely destroyed by fire following the earthquake of September, 1923. The present building is a temporary one, and it was expected to be reconstructed of permanent material on a new site on the bank of the River Sumida. The foundation of this building had already been built.

Charcot Anniversary

The centenary of the birth of the French neurologist Jean Martin Charcot is to be celebrated next June, and Japanese physicians will hold a commemoration ceremony in Tokyo in that month.

The Shanghai Research Institute

The Research Institute for Natural Science is to be established by Japan in Shanghai, China. Mr. N. Yamazaki, Viscount S. Okochi and Dr. Irizawa have lately been appointed its organizing committee. The buildings are already under construction on the site purchased in the French concession. Dr. Irizawa will be the first superintendent.

Nurses from Japan to Attend Conference

The Red Cross Society of Japan is selecting from among its staff a nurse to represent Japan at the International Conference of Nurses to be held in Finland for five days, beginning July 20. Japan participated in the conference in 1909 for the first time. It was held then in London. This seems to have been the first time Japanese women ever participated in an international gathering. Mrs. T. Hagiwara, now head nurse at the Red Cross Hospital, represented Japan. Mrs. Y. Yamamoto of the same hospital attended the next conference, in 1921. It is reported that St. Luke's International Hospital will send a delegate again this year.

Coeducation in Japanese Medical School

Women students are not admitted on the same plane with men in any colleges, whether they be public or private, except in those institutions established especially for women. The increasing desire of women for education makes them dissatisfied with things as they are, and so the cry of women medical students is heard often that universities should be thrown open to them, so that they may be received as regular undergraduates. At present they may be only auditors in the lectures. There is only one medical school for women, which accepts about 200 women out of thousands of applicants every year. A few more institutions of this kind are universally

longed for. Even the graduates of this school are not admitted to the university college of medicine, on the ground that the existing medical school for women is rather for vocational training than for scientific research, which is to be done in universities. The educational authorities say that unless the present system of the school for women is changed, its graduates cannot be taken as regular students in the university. However, I believe that some day in the near future will see many women students graduating with the M.D. degree from Japanese universities.

Epidemic Encephalitis in Japan

The unidentified disease, not wholly resembling epidemic (lethargic) encephalitis, which raged last summer in Japan, was called by the Japanese clinicians epidemic encephalitis. Some reported that a spirochete, others that a diplococcus had been found in the blood of patients, but the cause is not established definitely. Research workers of the Kyoto Imperial University College of Medicine and others succeeded in transmitting the disease to Japanese monkeys. The chief symptoms are headache, faintness, dizziness, vomiting, and aching of the limbs and trunk, coming on after a sudden elevation of temperature. At the same time there is loss of consciousness, which may lead to frenzy. In the mild form, loss of consciousness continues from five to six hours to one or two days. In the severe form a coma ensues, without recovery. If consciousness is restored, a lethargy follows, and recovery is very slow. No diplopia or ptosis has been noted. Most patients were above 50 years of age. Generally there remain no after-symptoms, except, rarely stiffness of the limbs. In the western parts of the country, where the disease raged most seriously, cervical stiffness and spasticity of the limbs were residual symptoms.

BERLIN

(From Our Regular Correspondent)

Feb. 7, 1925.

Qualifications of Specialists

In the medical press and at medical gatherings there has been much discussion of late as to what should constitute the qualifications of medical specialists. A desire has been manifested to take some action to prevent physicians from announcing themselves as specialists in a given branch of medicine before they have had the necessary training that would entitle them so to proclaim themselves. Physicians who lack adequate experience have been referred to as "six-week specialists," because, not infrequently, practicing physicians launch out as specialists after taking a six weeks' course in some special subject. There have been repeated demands that physicians be required to pass a special examination before they are accorded the right to proclaim themselves specialists in any given branch of medicine. Such demands have not, however, met with general approval. In view of the increasing importance of this question, it came up for discussion at the last convention of German physicians (the so-called "deutsche Aerztetag"), as the result of which the following criteria were drawn up:

I. The following specialties were recognized as such: (1) surgery; (2) diseases of women and obstetrics; (3) orthopedics; (4) ophthalmology; (5) laryngology; (6) dermatology and venereal diseases; (7) urology or diseases of the urinary organs; (8) nervous and mental diseases; (9) roentgenology and phototherapy; (10) stomatology, or diseases of the teeth, jaws and mouth, for which a dental diploma should be required; (11) internal medicine, including nervous diseases; (12) diseases of the gastro-intestinal tract, including disorders of metabolism; (13) pulmonary diseases, including affections of the respiratory tract, and (14) pediatrics, including the treatment of children through their thirteenth year, the counseling or treatment of adults, even though members of the same family, to be strictly eschewed.

Of the physicians practicing these specialties, more particularly those designated under Nos. 11 to 14, it is to be expected that they shall be supplied with the special apparatus and equipment needed for the exercise of their specialty, and that they will confine themselves in the main to their specialty, that is, make house visits only when absolutely necessary, and forego all forms of family practice as carried out by the general practitioner.

II. The assumption of the title of specialist in more than one of these branches of medicine or one of these groups or for other than the designated branches and groups is, as a rule, not admissible. Only in exceptional cases, and taking into account peculiar local conditions, can such assumption be countenanced when the two specialties concerned are the formerly frequently associated groups "surgery and orthopedics" or "surgery and diseases of women," and then only provided the physician assuming such title shall have had sufficient training in both branches.

III. The terms "specialist," "special physician" (*Spezialarzt*) or "physician for children's diseases" (or for any other of the groups), also such terms as "eye physician" (*Augenarzt*), "women's physician" (*Frauenarzt*) and "children's physician," likewise "surgeon," "internist" and the like, are to be regarded as synonymous with the *Facharzt* title and should not be employed by other than recognized *Fachärzte*. The title "practicing physician, surgeon and obstetrician" or *Badearzt* is, on the other hand, not the designation of a specialist. Such titles as "general practitioner and specialist in children's diseases" (or in any special branch) or "*Badearzt* and specialist in heart disease" are inadmissible, and may be assumed only in exceptional cases in consideration of local conditions and with the consent of the medical organizations and societies of specialists affected.

While a special examination for specialists does not seem desirable or necessary, yet the right to proclaim oneself a specialist should presuppose adequate special training in the branch of medicine concerned.

A specialist's training should be regarded as sufficient and should not be questioned if, after passing his doctor's examination, securing his license to practice, and completing one year of internship in a recognized hospital, he has had at least four years of experience in any one of the specialties designated as I-1, 2 and 11, or at least three years of experience in any of the other specialties. However, for the assumption of the title of specialist in more than one branch of medicine, as provided for in Paragraph II, six years of experience should be considered the minimum. A physician's experience in a field of medicine closely associated with the finally chosen specialty or in several such fields may be counted up to one year.

As a rule, training for a specialty should be acquired while serving in the capacity of assistant in the clinics of a university or academy for the study of the practice of medicine; in special departments of the larger hospitals under the direction of recognized specialists; in sanatoriums, in suitable private clinics or in special departments of military hospitals. Training received in so-called voluntary positions may also be counted if the volunteer can furnish proof that his work was of the same responsible character as that of an assistant. Likewise, the training received as assistant or volunteer physician (*Volontärarzt*) in independent university medical clinics, when these are combined with "district policlinics," may be counted entire, but, if not associated with such policlinics, only up to three years at the most. For the remaining specialties, the term of service in policlinics and as assistant during office hours to recognized specialists may be counted only up to one half of the actual time so spent.

Exceptions may be made only in special cases, in view of peculiar local and personal conditions and with the consent of the local group of specialists, by the competent medical organization (for instance, in the case of elderly practicing physicians who wish to take up a specialty). Proof in regard to previous training should be furnished in the form of certificates issued by directors and physicians in charge of clinics, giving details in regard to the nature and extent of the service performed.

A physician obtains official recognition as a specialist, in the following manner: Every league of physicians (*Bundesverein*) appoints a standing credentials committee, composed of an equal number of practicing physicians and specialists, to which is added, on receipt of an application from a physician desiring to be recognized as a specialist, a corresponding number of resident specialists of the same branch of medicine in which the applicant wishes to specialize, such specialists, however, being allowed only a voice in the deliberations but no vote. An applicant for recognition as a specialist, before he makes public announcement of his having opened his office, must file his certificates and testimonials with the credentials committee mentioned above, state his purpose or desire, and await the decision of the committee, which can be expected to be announced within two weeks. In case the request is not approved by the committee, it is customary to state the reasons for the adverse decision, and, in some instances, the suggestion is offered that the applicant renew his request after certain disqualifications have been removed.

Against an adverse decision the applicant may, within two weeks, file an appeal with the *Aerztekammer* (chamber of physicians) having jurisdiction, or, if there is no such body, with the corresponding state organization representing the medical profession. It is also permissible for a representative state organization to appoint for this purpose a board of appeals. The society or board to which an appeal is taken will, within two weeks, render a final decision, binding on both parties, and may also offer the suggestion that the request be renewed after the removal of suggested disabilities.

In case the applicant refuses to abide by the decision of the board of appeal, he will not be eligible to membership in the local medical society or in the society of panel physicians (*Kassenärztevereín*), and will thus be excluded from panel practice. He will also render himself liable to trial before a court of honor.

Legal regulation of the problem as how best to control the practice of medical specialties is neither desired nor necessary. It is a question solely for the medical profession to decide. It affects general practitioners and specialists alike, and can be solved only through frank, open-minded discussion and the genial cooperation of the parties concerned, either in the general assembly of local medical societies in which all professional interests are represented, or, if necessary, at the congresses of the larger organizations.

As an aid in the preservation of good relations between the members of the medical profession, the enunciation of the following principles may not be devoid of value:

1. A specialist in any branch of medicine must be provided with the necessary special equipment for the practice of his specialty. He should confine himself, in the main, to his chosen specialty, and should limit himself to office, hospital and consultative practice. He must, in general, accept no domiciliary practice.

2. Specialists should, after completing the special treatment needed by referred private patients, refer them back to their attending physician with a short report on their condition. In case of intercurrent affections arising before the special treatment has been completed, referred private patients should be turned over to the general practitioner. If referred patients are receiving institutional treatment, in case of intercurrent disease arising, the physician who referred them should be summoned, or, if that is not feasible, some other general practitioner; large hospitals with special departments would constitute an exception to this rule.

3. Specialists should show an interest in the general purposes and endeavors of the medical societies and should support the general practitioners in the carrying out of justifiable demands.

4. In return, the specialists may reasonably expect the general practitioners promptly to refer to them private patients who are in need of special treatment. In the case of persons insured in the health insurance societies, the specialists should be able to count on the support of the general practitioners in their demands for the free choice of physician, payment for each individual service rendered and the abolition of all restrictions with reference to the referring of patients. In the case of health insurance societies in which these demands are not attainable, the specialists will naturally expect the aid of the general practitioners in securing for themselves the adoption of a higher fee schedule, in conformity with their increased costs of practice. The specialists demand also that in the medical societies and in the economic organizations they be given sufficient opportunity to present and defend their interests.

PRAGUE

(From Our Regular Correspondent)

Feb. 9, 1925.

Conditions of Medical Practice

Last year, the Young Generation of Czechoslovak Physicians organized a series of lectures followed by discussions on the present conditions and the future of the medical profession in Czechoslovakia. This symposium revealed that the old time of free medical practice is slowly dying out and is being replaced by more highly organized forms of service. It was interesting to note that it was impossible to find a physician in Prague to present the point of view of the general practitioner, because there was no physician who was not connected in some way with organized medical service. Great progress has been made since the approval of the title of specialist was put in the hands of the chambers of physicians. Unfortunately, these chambers do not exist in all provinces. Specialists practice largely in big cities. An effort should be made to facilitate their practice also in smaller provincial cities, in which there is a decided opportunity for them. Insurance companies employ specialists to a considerable extent. In cities where medical schools exist, many patients go to the university clinics.

With the steady progress in the creation of new hospitals, hospital physicians have grown into a large body. The hospitals in country districts were originally organized as surgical hospitals, and later on departments for internal medicine were added to them. The present needs are most acute for the care of infectious diseases, especially for cases of advanced tuberculosis. Special obstetric departments are to be organized. Homes for incurables are badly needed. The striking fact is that there are territories in which there are more hospital beds than patients can be found for them; but, on the other side, there are wide areas without hospital accommodations. Physicians in insane asylums complain of the physical and mental isolation which their vocation entails, since these institutions are located in remote districts. The insane, the feebleminded and the morally defective should be confined in special institutions.

The question of the use of country hospitals as training centers for young physicians has lately been discussed. The new law on medical practice introduces a compulsory year of

hospital practice for newly graduated physicians. The city hospitals are inadequate for this purpose. On the other hand, the physician could not become experienced in all branches of medical science in a smaller country hospital. Therefore it seems necessary to create machinery for the interchange of interns among the different hospitals. A beginning has already been made in the state hospitals, and the plan will be slowly extended to district and local hospitals.

Forty per cent. of the places in the medical service of the army are vacant. Civilian physicians employed by contract fill in the gaps, but the service is unsatisfactory. In the near future, stipends for medical students will be introduced for those who assume the obligation of serving in the army for a number of years after graduation. Army medical service is avoided by the younger physicians, because of the relatively small pay and the lack of scientific reputation on the part of military physicians.

The service of physicians who serve as legal experts in the courts will probably be reorganized in the near future. Under the present régime, those physicians generally function as legal experts who possess a public health degree in which a course on legal medicine is also included. The ministry of justice complains of the relatively low scientific standards of the service rendered, and of its comparatively high cost. Therefore, probably the service will be centralized in the hands of fewer men, who shall submit to a special examination. Insurance has become the most important source of revenue for the medical profession. Life insurance which is in the hands of private companies, is relatively of the smallest importance. The physicians who work for them complain of the dependence on the local agents, who are inclined to avoid the physician that is conscientious and tries to protect the company by careful examination, while the agent is solely interested in the completion of the contract even to the detriment of the company. Therefore the physicians ask that the company itself should choose the physicians who are to function as their experts. Sickness insurance is the daily bread of the Czechoslovak practitioner. Fees are being paid under the present contract per case of sickness and number of attendances. Out of the total population of the whole state of thirteen and a half million, two and a half million are insured directly and more than five million indirectly (as members of the family of an insured person). Further extension of insurance is in sight. The medical profession is fighting for the system of organized free choice of physicians in sickness insurance, and stands in strong opposition to the erection of dispensaries and clinics for insurance patients with salaried medical officers. The extension of insurance to include accident, invalidity and old age benefits is just now being organized. This might mean an important step in the creation of curative institutions and institutions for the prevention of disability, if properly conducted. Unfortunately, the influence of the organized medical profession on the development of the whole scheme is not such as might be desired. Conditions in the public health service are not satisfactory. The nationalized local health officers receive insufficient income, and therefore they could not be denied the privilege of private practice. The independence from local politicians which this measure brought to the local health officers acts as a decided advantage. School physicians, whose service was organized in Prague, in 1904, are slowly being introduced in all the schools. The defects of the service lie in the insufficient provision for the correction of defects and the lack of public health nurses. A new category of medical officers has grown up in the health centers, where they have been appointed with fixed salaries. Nevertheless, it was not possible in all cases to keep them as full-time employees and prohibit their private practice, although the tendency has been in this direction. This symposium has aroused a considerable interest in medical circles, and it is planned to formulate the different items in resolutions to become the official program of the organized Czechoslovak medical profession.

Institute for Plastic Surgery

The Czechoslovak Red Cross has opened recently in the building of its sanatorium in Prague an institute for plastic surgery under the direction of Dr. F. Burian. The purpose of the institute is to permit poor patients to avail themselves of the services of a skilled surgeon in the field of plastic surgery. This problem has become an important one, because there are many war veterans who, owing to the disfiguring wounds suffered in the World War, cannot find proper employment in civil life. The institute is being subsidized from the state treasury.

VIENNA

(From Our Regular Correspondent)

Jan. 25, 1925.

A Patient's Unusual Control of the Smooth and the Striped Muscles

Dr. Nafferl recently presented to the Vienna Gesellschaft der Aerzte a patient who has a very unusual control of his musculature. He is able to bring about coordinations of muscles that are not observed in normal persons. The man who was presented before the society demonstrated at will the following conditions: (1) protrusion of one eyeball and simultaneous dilatation of the pupil of the same eye; (2) ptosis of each eye separately; (3) strabismus of each eye separately, alternately outward and inward; (4) divergent strabismus; (5) rapid elevation and depression of the larynx, while the tongue remains motionless; (6) torticollis; (7) unilateral movements of the platysma myoides; (8) isolated rotation of the upper arm at the shoulder and at the elbow joint; (9) isolated contraction and relaxation of the left biceps and the right triceps simultaneously; (10) dextroconvex scoliosis, continued for a period of time; (11) isolated contractions of the pectoralis major and of certain portions of that muscle; (12) suppression of the radial pulse through compression of the subclavian artery between the clavicle and the first rib, as a result of action of the subclavian muscle; (13) displacement of the abdominal viscera—downward, from right to left, and vice versa, by wavelike contractions of the recti abdominis, which the patient can retard at pleasure; (14) Dupuytren's abdomen; (15) voluntary relaxation of certain portions of the diaphragm; (16) shifting of the heart to the right so that pulsation was noted over the pit of the stomach; (17) retardation of the heart beat; (18) gooseflesh through innervation of the arrectores pili; (19) paradoxical innervation of the musculature controlling the play of the features, so that half of the face wears a smile and the other half reflects anger. In executing many of these movements the patient finds it necessary to call to mind certain conceptions; for instance, intense cold, severe abdominal pain. The same patient was examined and presented by Zuckerkandl, many years ago. His peculiar ability has not been exercised, to any extent, since that time.

The Difficult Position of the Medical Profession in Austria

As is evidenced by the report of the economic society, financial conditions among Austrian physicians have changed very much for the worse, during the last ten years. Especially during the last two years it has been observed that there has been a 150 per cent. increase in the number of requests for monetary assistance that have reached the society. It is particularly significant that a considerable

number of physicians have given up the practice of medicine and are endeavoring to make a living in some other way. Some have become book agents; others representatives of chemical works or pharmaceutical houses, or of manufacturers of surgical instruments. In one instance a physician has become a street cleaner. During the year 1924, five physicians committed suicide on account of financial stress, three at an advanced age (65-70) and two younger men. The physicians in the cities who have a practice confine their activities almost entirely to the work of the health insurance societies or to some form of contract practice. They have very few private patients. In Vienna, 80 per cent. of the population are insured in the health insurance societies. In the rural sections, conditions are better, but the schools for the children, the educational advantages for physicians, forms of entertainment and the organization of society in general are of such a primitive character that very few of the newer graduates seem inclined to take up their abode in the country districts. Thus, the proportion of physicians in the cities to the total population has become exceedingly unfavorable. In Vienna there are 4,000 physicians, or, with a population of 1,800,000, one physician to 450 persons, on an average. In the rural sections there are only 2,000 physicians for a population of 4,500,000, or one physician to 2,200 inhabitants. The controversies between the panel physicians and the directors of the health insurance societies, by reason of differences of opinion over the establishment of fee schedules, seem never to be settled; and since the fee schedules originally set up for the health insurance societies have come to be recognized as constituting a basis for the adjudication of fees for private patients as well, it is only natural that the physicians are showing a stubborn resistance. At present, the average income of a competent practicing physician is no more than from five to seven million crowns a month, or about $80 to $100; but there are many physicians who are not earning half of that amount. Possibly 20 per cent. of the physicians have an income of more than fourteen million crowns a month ($200), but that includes the specialists, who seem to be faring somewhat better. Owing to the scarcity of money in our republic, the general public does not call a physician unless absolutely necessary, while many who do make use of his services are very slow in paying their bills. Then, too, the unusually mild winter (we have had no snow as yet) has been favorable to the general health of the population. There is, to be sure, an epidemic of measles, chickenpox and mumps, but the cases are all very light. Especially measles has not been of so mild a type for many years. The cases develop rapidly, and the course of the disease is short. The sequels and complications in the form of otitis media and bronchitis are of short duration. Influenza, which has reappeared so frequently, is entirely absent this winter—doubtless owing to the dry, sunshiny days. There are a number of cases of epidemic hiccup which add to the duties of the practicing physicians, as the tormenting and disquieting symptoms seem to require the help of a physician.

Marriages

ROBERT EVAN VICKERS of Huntington, W. Va., to Miss Blanche Bush of Ceredo, W. Va., January 10.

THEODORE FRANK FOSTER, Cincinnati, to Miss Anna Marie Sattler of Mansfield, Ohio, February 9.

FRANCIS TONE CAVILL, Jessup, Pa., to Mrs. Emma Sisson Pavey of Lincoln, Ill., February 17.

FRANK AMOS CHAPMAN to Miss Katherine Howe, both of Chicago, Dec. 20, 1924.

Deaths

Walter T. Williamson ● a Trustee of the American Medical Association since 1920 and chairman of the Board since June, 1924, died suddenly at his home in Portland, Ore., March 2, of myocardial degeneration and angina pectoris. He was born in Peterboro, Canada, Aug. 6, 1850, and received his medical degree from the University of California Medical School in 1877. In 1889, he took up practice in Oregon, and early became prominent for his work in nervous and mental diseases, devoting most of his time in later years to the conduct of the Mountain View Sanatorium. He was professor of nervous diseases in Willamette University, and for seventeen years physician at the state hospital in Salem, Ore. He took active part in the affairs of medical organization, delivering notable addresses before state medical associations on problems associated with nervous and mental diseases, and also in connection with education of the public. He had been president of his city, county and state societies. He served the American Medical Association as a member of the House of Delegates in 1908 and continuously from 1914 until 1917. He again became a member of the House of Delegates in 1919, and, as has been stated, a Trustee in 1920. As a member of the Reference Committee on Reports of Officers in the House of Delegates, he became especially familiar with the work of the executives of the Association. As a Trustee, Dr. Williamson rendered devoted service, never absenting himself from any of the sessions of the Board, although at times attending at great sacrifice because of ill health. Dr. Williamson was a man of high ideals, and of calm and methodical disposition. He had a facility of expression that made his public addresses unusually inspiring, and a personality that held his hearers.

Paul Michinard ● New Orleans; Medical Department of the Tulane University of Louisiana, New Orleans, 1883; professor of obstetrics and gynecology, New Orleans Polyclinic; member of the Southern Surgical Association; formerly member of the city board of health; on the staff of the Charity Hospital; aged 66; died, February 10, of heart disease.

Henry Pickering Parker ● Washington, D. C.; Johns Hopkins University Medical Department, Baltimore, 1901; professor of principles and practice of medicine, Howard University School of Medicine; served in the M. C., U. S. Army, during the World War; on the staffs of the Garfield and Emergency hospitals; aged 49; died, February 19, of heart disease.

Frederick Lantz Gourley, Los Angeles; University of Illinois College of Medicine, Chicago, 1903; formerly on the staff of the Jane McAllister Hospital, now the Victory Memorial Hospital, Waukegan, Ill.; served in the M. C., U. S. Army, during the World War; aged 47; died, February 12, of cerebral hemorrhage.

Parnag Adam Adamian, Worcester, Mass.; Medical School of Harvard University, Boston, 1906; member of the Massachusetts Medical Society; formerly professor of pathology and bacteriology, College of Physicians and Surgeons, Boston; aged 55; died, February 3, of pneumonia.

John Fendall Ragland, Jr., Petersburg, Va.; Medical College of Virginia, Richmond, 1900; member of the Medical Society of Virginia; served in the M. C., U. S. Navy, during the World War; aged 50; died, February 10, at the Johnston-Willis Sanatorium, Richmond, of heart disease.

Obadiah Herbert Sproul ● Flemington, N. J.; University of Pennsylvania School of Medicine, Philadelphia, 1866; past president of the Medical Society of New Jersey; for twenty years member of the school board; aged 80; died, February 13, of carcinoma of the stomach.

David Owen Thomas ● Minneapolis; Medical College of Indiana, Indianapolis, 1884; Medical Department of Columbia University, New York, 1891; on the staff of the Asbury Hospital; aged 72; died, February 11, of coronary sclerosis and angina pectoris.

Murray R. Stewart ● Salt Lake City; Rush Medical College, Chicago, 1897; specialized in ophthalmology, otology, laryngology and rhinology; city commissioner; formerly on the staff of the Salt Lake County Hospital; aged 56; died, February 5.

● Indicates "Fellow" of the American Medical Association.

Simeon Lovell Bearce Blacke, Fruithurst, Ala.; Medical College of Ohio, Cincinnati, 1869; member of the Medical Association of the State of Alabama; Civil War veteran; formerly a druggist and postmaster; aged 84; died, January 30.

George Martin Blackburn, Minier, Ill.; University of Wooster Medical Department, Cleveland, 1869; Civil War veteran; aged 80; died, February 4, at the Brokaw Hospital, Bloomington, following an operation for strangulated hernia.

Donald Campbell ● Butte, Mont.; University of Vermont College of Medicine, Burlington, 1891; third vice president of the American Medical Association; past president of the Medical Association of Montana; aged 62; died, February 6.

Samuel D. Terrell, Memphis, Tenn.; Memphis Hospital Medical College, 1896; member of the Tennessee State Medical Association; aged 53; died suddenly, February 10, at Biloxi, Miss., of heart disease.

Elizabeth Abbott Carleton, Boston; New England Female Medical College, Boston, 1872; founder, president and physician in charge of the Home for Aged Couples, where she died, January 26, aged 96.

Paul Plummer, Southington, Conn.; University of Vermont College of Medicine, Burlington, 1894; member of the Connecticut State Medical Society; aged 57; died recently, of heart disease and asthma.

John Henry Noah, Vinita, Okla.; College of Physicians and Surgeons, Little Rock, Ark., 1911; served in the M. C., U. S. Army, during the World War; aged 41; died, Nov. 24, 1924.

Stanley Newhouse, Kansas City, Mo.; University Medical College of Kansas City, 1908; on the staff of St. Joseph's Hospital; aged 47; died, February 14, following a long illness.

William H. Bowen, Jr., Providence, R. I. (licensed, Rhode Island, 1902); aged 50; died, January 20, at the Rhode Island Hospital, of chronic myocarditis and chronic nephritis.

William Jordan, Aspermont, Texas; University of Nashville (Tenn.) Medical Department, 1899; aged 52; died, January 21, at a hospital in Stanford, of pneumonia.

George Hallam Beckley, Derry, N. H.; Baltimore University School of Medicine, 1896; member of the New Hampshire Medical Society; aged 58; died, January 22.

Walter Woodbury Stockwell, Stockton, Calif.; University of Oregon Medical School, Portland, 1894; aged 64; died suddenly, February 11, of heart disease.

James H. Moninger, Asareo, Durango, Mexico; Starling Medical College, Columbus, 1888; aged 62; died, February 2, at El Paso, Texas, of heart disease.

Otha William Fenton Snyder, Chicago; Physio-Medical Institute, Cincinnati, 1878; aged 75; died, February 19, of uremia and chronic nephritis.

William J. Kilander, Markle, Ind. (licensed, Indiana, 1897); aged 86; died, January 25, at Huntington, of hemorrhage and gastric ulcer.

Seymour Bickwell Young, Salt Lake City, Medical Department of the University of the City of New York, 1874; aged 87; died, Dec. 15, 1924.

John B. Hart, New Orleans; Medical Department of the Tulane University of Louisiana, New Orleans, 1886; aged 62; died, February 9.

John M. Adams, Cincinnati; Long Island College Hospital, Brooklyn, 1866; Civil War veteran; aged 81; died in February, at Oxford.

Orian Thomas Dozier, Birmingham, Ala.; Atlanta (Ga.) Medical College, 1874; Confederate veteran; aged 76; died, February 10.

Henry Leach Reid ● Charleston, Mo.; Kentucky School of Medicine, 1890; aged 58; died, February 5, of cerebral hemorrhage.

Charles James Terrell, Hewlett, Va.; Philadelphia College of Medicine and Surgery, 1856; aged 90; died in February, at Chatham.

Cadwallader Evans, Pittsburgh; Jefferson Medical College of Philadelphia, 1868; aged 80; died, February 7, at Los Angeles.

Thomas Graham Faulkner, Kinston, N. C.; University College of Medicine, Richmond, Va., 1910; aged 38; died, February 6.

The Propaganda for Reform

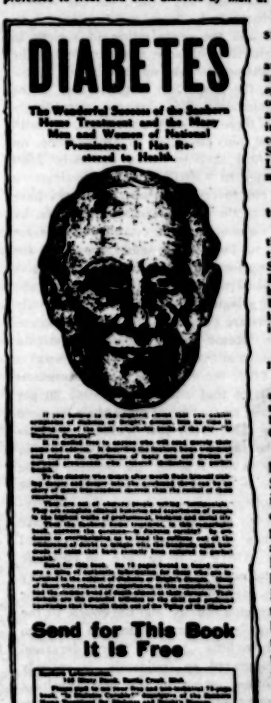
IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

THE SANBORN TREATMENT FOR DIABETES

During the last few years, THE JOURNAL has received inquiries of which the following are typical:

From an Iowa physician:

"What can you tell me of Dr. Ida M. Sanborn of Chicago? She professes to treat and cure diabetes by mail at $30 per month."



Photographic reproduction, greatly reduced, of a newspaper advertisement of the Sanborn Laboratories at Battle Creek, Mich.

And this from a physician in Illinois:

"Will you kindly give me an idea of the ethical standard of the *Medical Review of Reviews?* I am interested on account of a recent article in this journal telling of the wonderful successes of one Dr. Ida M. Sanborn and her Analytical Laboratories in the treatment of diabetes."

A Presbyterian pastor wrote:

"Will you kindly give me the medical estimate of the treatment of Dr. Ida M. Sanborn of Chicago for Diabetes? I have had diabetes for three years and Dr. Sanborn's work has been brought to my notice in a rather favorable way."

And recently a Minnesota physician wrote:

"Can you give me information on the Sanborn treatment for diabetes given by two doctors at Battle Creek, Michigan?"

THE JOURNAL first heard of this so-called Sanborn diabetes cure in 1914, when we received inquiries from physicians. At that time a physician submitted a letter that a patient had received from Dr. I. M. Sanborn in reply to a letter and had been sent by the patient. The Sanborn letter read in part as follows:

"Your letter and specimen reached me safely. I just completed the analyses and can see no reason why we cannot promise you complete recovery. The condition is of long standing, but I am positive of the ultimate outcome if you follow out instructions with the medicines as I prescribe them. Should you decide to take a course of my treatment, notify me at once enclosing draft for $20 and I will forward you a supply of my medicine with full instructions by return express."

From 1914 until 1921, only scattering inquiries came in regarding the so-called Sanborn treatment. Then there appeared in a religious weekly, the *Christian Herald*, for Feb. 19, 1921, an article by Margaret E. Sangster, entitled "A Woman Who Saves Lives: The Story of a Physician Who Holds Out New Hope." This was a fulsome puff of Dr. Ida M. Sanborn, whose picture adorned the article. The story was to the effect that the publicity might never have

been given to Dr. Sanborn had it not been for a prominent Chicago lawyer, one Charles Sumner Harmon, who had long been a sufferer from diabetes and had been treated without results by various physicians, finally coming to Dr. Sanborn. Then, to quote from the article:

"And so she cured him. Not in a day—not in a week, or in a month. But from the beginning Mr. Harmon was allowed to eat wholesome, nourishing food — carefully selected at first — which he had been longing for. From the outset he was permitted to exercise, to gain new strength and courage. And at the end of nine months he was entirely well."

To get a little ahead of our story, it may be said at this point that Charles Sumner Harmon died, Dec. 14, 1924; cause of death: diabetes mellitus!

The Sangster story then described how Mr. Harmon persuaded Dr. Sanborn to advertise her cure. "That is why, today, Dr. Sanborn has stepped from the background into the light. That is why people have come to recognize her, why she has grown prominent in the medical field, why her work is becoming well and favorably known to the heads of her profession as well as to the layman."

Some time before the appearance of the *Christian Herald* article, the public had been circularized with a four page leaflet sent out by the Analytical Laboratories, Inc., of Chicago. The Analytical Laboratories had for its president C. S. Harmon, and for its medical director Ida M. Sanborn. The advertising circular, some three thousand of which were sent out, announced "the extension of the Sanborn treatment for diabetes and Bright's disease through the organization of the Analytical Laboratories, Inc." According to this announcement:

"The treatment involves no interruption of ordinary pursuits, and a normal, nourishing diet, with no restrictions, is fundamental and essential from the start.

"Each case is individually diagnosed and treated under the personal direction of the Medical Director.

"The diagnosis is based upon a special urinalysis, requiring five days, which unerringly discloses the true condition. A personal consultation, therefore, is unnecessary.

"The list of cures covers many years and almost this entire country."

Following the Sangster article, THE JOURNAL was deluged with inquiries about the alleged cure. In answering these it was pointed out that the alleged marvelous results produced by Dr. Sanborn in the treatment of diabetes seemed never to have been brought to the attention of the medical profession, and that a rather careful search through medical literature from the time of Dr. Sanborn's graduation from an eclectic medical school in 1898 to date failed to disclose any article written by her or about her "treatment." One of these letters evidently fell into the hands of Mr. Harmon, and this gentleman wrote declaring that there was an entire lack of foundation for THE JOURNAL's charges, although THE JOURNAL had made no charges. Mr. Harmon declared that he assumed personal and entire responsibility for the "Announcement" that has been previously referred to and quoted from, and stated that Dr. Sanborn had disapproved of the announcement circular, and, therefore, they had ceased sending it out.

As has been stated, the *Christian Herald* article appeared in February, 1921. In January, 1922, an article appeared in the *Medical Review of Reviews*, entitled "Diabetes and Bright's Disease—Can They Be Cured?" The author of the article was given as "Edwin F. Bowers, M.D." Readers of THE JOURNAL will remember Edwin F. Bowers. He is the man who for years, posing as a physician, has published scores of articles of the pseudomedical, quasiscientific type in popular magazines. He has signed "M.D." after his name and has used printed stationery of the same style. Yet he has been made to admit that he is not a physician, has never been graduated in medicine, has never been licensed to practice medicine and has never attended any medical school. Bowers is one of the fake M.D.'s under whose names articles occasionally run in *Physical Culture*. It was "Edwin F. Bowers, M.D.," who published an article in *Physical Culture* featuring "milk diet" as a cure for locomotor ataxia. And when sufferers from this disease wrote to him it was Bowers, who, signing himself "M.D.," sent them advertising circulars of "Bioplasm (Bower)," recommending this "patent medicine" as a treatment.

The Bowers article in the *Medical Review of Reviews* was an extended puff of the Sanborn treatment. In it, Bowers stated that Mr. C. S. Harmon had "been restored to health through the ministrations of Dr. Sanborn, as I can testify from personal investigation." This is the same Mr. Harmon who was the central figure in Margaret Sangster's article, who was responsible for the creation of the Analytical Laboratories, Inc., of which he was president, and who died some months ago of the disease of which he and others had declared Dr. Sanborn had cured him. Needless to say, Bowers' article gave no information that meant anything regarding the details of the Sanborn treatment. In fact, the treatment itself was dismissed by Bowers with one paragraph, thus:

"The treatment Dr. Sanborn employs consists of a combination of Leptandrin, Sodium Sulph., Potassium Phos., Sodium Cacodylate, Sod. Bicarb. and Capsicum, so adjusted and proportioned as to meet the wide range of pathological conditions that present, or the changes that may develop during the progress of the treatment."

After the Bowers article appeared, it was reprinted in leaflet form and, like Mr. Harmon's "announcement," was distributed where it would bring in the greatest returns. Gradually, however, the activities of the Analytical Laboratories fell off, and a year or two ago the Chicago offices were closed.

The next heard of the Sanborn treatment was from Battle Creek, Mich. It is now called "The Sanborn Laboratories," and large newspaper advertisements sing its praises. It has

Photographic reproduction of advertisements of the Peebles' Institute and the Bobo goiter cure, and also of the letterhead of the Sanborn Laboratories. Walter T. Bobo and Ernest D. Perkins of the medical staff of the Sanborn Laboratories used to be connected, if they are not still, with the Peebles' Institute of Health. Bobo still exploits his goiter cure.

for its "medical staff" Walter T. Bobo, M.D., and Ernest D. Perkins, M.D.—names that will sound familiar to students of contemporary quackery. Walter T. Bobo has long been connected with mail-order quack concerns. For many years he was treasurer and general manager of the Peebles' Institute, which exploited among other things an epilepsy "cure" that was exposed in THE JOURNAL more than ten years ago. In December, 1902, Peebles and Bobo were reported to have been convicted by a jury in the United States courts of violating the postal laws. At that time they were exploiting a "mind cure" from the "Peebles' Institute of Health." Bobo, in addition to his connection with the Peebles fakery, also had—and still has—a mail-order goiter "cure" of his own. Today he also has a mail-order diabetes "cure."

Ernest D. Perkins practiced medicine in Ashland, Wis., for about fourteen years, from 1886 until 1900. He then came to Chicago, where he practiced for another fourteen years, going to Battle Creek about 1914. At about the time he went to Battle Creek, the Peebles' Institute of Health announced the addition of Ernest D. Perkins, M.D., to its "medical staff." Now Dr. Perkins appears as one of the two members of the "medical staff" of the Sanborn Laboratories.

In a letter on the Sanborn Laboratories stationery written some weeks ago to a diabetic sufferer, Perkins tells the prospective victim that the Sanborn treatment is, in his opinion, "the closest approach to a specific cure for diabetes that is known today, not excepting the new and much talked of remedy insulin." He adds: "Many of our successful cases

had used insulin without any lasting results before taking up the Sanborn treatment."

What the next stage in the downward path of the Sanborn treatment for diabetes will be, one can only surmise. Just how many unnecessary, or, at least, untimely deaths the Sanborn treatment has been responsible for, no one will know. That it has been responsible for some, THE JOURNAL has evidence; that it has been responsible for many seems likely.

Correspondence

EPINEPHRIN IN ANESTHESIA

To the Editor:—In the article that Dr. Joseph F. Wearn contributes to "Glandular Therapy" (THE JOURNAL, Nov. 8, 1924, p. 1508), I note a flagrant contradiction between two assertions:

> In conditions in which there exist a weak failing heart action and lowered blood pressure but no increase in capillary permeability, epinephrin is an excellent cardiovascular stimulant. An example of such a condition is the collapse that sometimes follows excessive anesthesia.
>
> The use of epinephrin either during or immediately after chloroform anesthesia is distinctly contraindicated because of the frequency of ventricular fibrillation and death following the combination of these two drugs.

CARLOS MANUEL GARCIA, Havana, Cuba.

[The matter was referred to Dr. Wearn, who replies:]

To the Editor:—I might have made the point more clear by stating that epinephrin is an excellent cardiovascular stimulant following collapse after anesthesia other than chloroform. My purpose in adding the paragraph about chloroform was to prevent the use of epinephrin after chloroform anesthesia, and I thought the warning against chloroform would serve to clarify rather than to make a "flagrant contradiction" of the statement in the previous paragraph.

BIOGRAPHY OF DR. BIGGS

To the Editor:—I have just undertaken, at the request of Mrs. Biggs, to write a biography of the late Dr. Hermann M. Biggs. I shall be particularly grateful for copies of correspondence or other material relating to Dr. Bigg's life and work which readers of THE JOURNAL may have in their possession and may be willing to make available for use in this task.

C.-E. A. WINSLOW, M.D.
Yale University School of Medicine,
New Haven, Conn.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

EXEMPTION OF HOSPITALS FROM TAXATION

To the Editor:—I should like some information about the matter of exemption of hospitals from taxation as follows: (*a*) Are private hospitals exempt from taxation? (*b*) Are charitable hospitals exempt from taxation? (*c*) Are the private pavilions of charitable hospitals exempt from taxation? Have you any file of current opinions on the subject?

BYRON C. DARLING, M.D., New York.

ANSWER.—(*a*) A private hospital may be exempt from taxation if organized and operated as a charitable institution; (*b*) charitable hospitals are usually declared exempt from taxation by the constitution or statutes of the state in which the hospital operates; (*c*) if the income from the private pavilion inures solely to the benefit of the charitable hospital, then such pavilion is exempt from taxation if the rest of the hospital is exempt.

New York exempts the real property of an association or corporation organized exclusively for charitable, hospital or infirmary purposes, if no officer, manager or employee thereof receives pecuniary profit aside from reasonable compensation for his services. The New York law further provides that a lot or building actually used for hospital purposes "by a free public hospital, depending for maintenance and support upon voluntary charity, shall not be taxed as to a portion thereof leased or otherwise used for the purposes of income, when such income is necessary for, and is actually applied to the maintenance and support of such hospital." If the income from the part so used or leased is not applied according to the terms of the statute, then that part of the property is not exempt from taxation (Laws of New York, 1918, Ch. 288).

The question of the exemption of charitable hospitals from taxation will be found discussed in the following cases:

Gray Street Infirmary v. *City of Louisville*, 65 S. W. 1, 55 L. R. A., 270.
Philadelphia v. *Penna. Hospital*, 25 Atl. 1076
New England Sanitarium v. *Inhabitants of Stoneham*, 91 N. E. (Mass.) 385.
City of San Antonio v. *Santa Rose Infirmary*, 249 S. W. 501.
Union Pacific Railway v. *Artist*, 60 Federal 365.
Richardson v. *Corbin Hill Coal Company*, 10 Wash. 651.
Eigmy v. *Union Pac. Railway Company*, 93 Iowa 538.

CANCELLATION OF REGISTRATION UNDER HARRISON NARCOTIC ACT

To the Editor:—Is there any federal law or federal court decision empowering a collector of internal revenue to cancel a physician's registration under the Harrison Narcotic Act? *Starnes* v. *Rose*, 282 Fed. R. 336 (abstracted in THE JOURNAL, Jan. 20, 1923, p. 205) denies the power of a collector to refuse to register a licensed physician, and I have been unable to find any law or any court decision to the contrary. Several physicians of my knowledge and acquaintance, however, have been denied the right to prescribe or dispense narcotics by a collector of internal revenue.

———, Texas.

ANSWER.—No authority has been found for the cancellation of a physician's registration by a collector of internal revenue. On the contrary, the United States District Court, Northern District, Georgia, in *Starnes* v. *Rose*, 282 Fed. R. 336, decided in July, 1922, pointed out that the Harrison Narcotic Act contains no provision for refusal of registration to any would-be registrant lawfully engaged in the practice of medicine. The power to confine to qualified persons the right to prescribe and dispense narcotic drugs is a police power, not vested in Congress. The qualifications of such persons, the court points out, are fixed by state laws, and neither the collector nor his superior officer has power to add any other qualifications or obstacles to registration. Even if the instructions issued by the Commissioner of Internal Revenue, July 26, 1921, had had the approval of the Secretary of the Treasury, which was necessary to give them validity as regulations under the Harrison Narcotic Act, they could not make a pending charge of crime ground for refusing registration. If the commissioner should undertake to refuse registration even after conviction, he would, in effect, be undertaking to add to the penalties fixed by Congress, in that he would be limiting the right of the defendant to practice his lawful calling, to the extent that he denied to the defendant the right to prescribe narcotic drugs. The collector, said the court, must register on proper application all who are by the state law permitted to prescribe and dispense narcotic drugs. He has no discretion in the matter.

The principles laid down by the court with respect to refusal of registration seem to be applicable with equal force to cancellation of registration; for if a collector could cancel registration, he might cancel it immediately after the applicant had been registered, and thus in effect deny to the registrant the right the court says he has.

SYNCOPE AS CAUSE OF DEATH

To the Editor:—I should like to learn from the literature under what conditions it is proper to sign syncope as the cause of death on a death certificate, or is it improper to use the term? Also, whether death by syncope can always or ever be determined at necropsy without the clinical history? Also what relation has it to, or can it be compared with, the indefinite term "heart failure," which is synonymous with ignorance of the cause of death on the part of the physician? Kindly do not publish my name and address.

———, M.D., San Francisco.

ANSWER.—Syncope is defined as a more or less sudden failure of the heart's action, producing pallor, coldness of the skin, muscular prostration, and unconsciousness due to cerebral anemia. It is not a proper term to be used on a death certificate, being as undesirable a term for such use as is "heart failure." If no more definite statement can be made, the death should be classified among the ill defined diseases. The Manual of the International List of Causes of Death, United States Census Bureau, 1911, suggests that the

return be made "unknown disease" if external causes can be excluded, or "unknown chronic disease" if acute infective diseases can also be excluded. If the death is puerperal, this should also be noted. A necropsy without the clinical history cannot determine heart failure as the cause of death in the absence of organic heart disease. If organic heart disease is to be given as the cause of death, the certificate should ascribe the death to the exact form of the cardiac disease.

STERILIZATION OF MORPHIN SULPHATE

To the Editor:—Would you be kind enough to give me some information concerning the stability of morphin sulphate if kept under sterile conditions, if, especially, a preservative such as thymol is used? Would it deteriorate and if so, in what way: by losing its potency, or by changing to apomorphin? Should the solution of morphin sulphate be boiled vigorously, as in sterilizing any other solution for hypodermic use, or is its composition altered thereby? M. E. A., M.D., Waterbury, Conn.

ANSWER.—Solutions of morphin sulphate may be sterilized without decomposition by boiling in hard glass containers. If such solutions are kept sterile in containers of hard, amber glass, they are stable for a considerable time. (There were formerly described in the British Pharmacopeia "solutions of morphine salts." These were found unsatisfactory and have been generally abandoned.) However, if the solutions are kept in soft glass containers, the alkali that may dissolve from the glass will tend to precipitate the alkaloid. According to the United States Dispensatory (Ed. 20, p. 708), solutions of morphin sulphate will become weakened if exposed to the air, owing to the growth of microscopic plants belonging to the *Confervoideae*. According to Hamberg (*Am. J. Pharm.*, 1881), the solution is best prepared by dissolving the salt in boiling distilled water that is free from ammonia and from phosphoric, nitric and nitrous acids, filtering the solution through paper that has not been previously wet, and storing in small, completely filled bottles of hard glass, preferably in the dark. It would seem best not to keep stock solutions of morphin sulphate for any considerable time except in small bottles, as mentioned above, or in sealed ampules of hard glass, the entire contents of which may be used at the time of opening or shortly after. Just what effect the thymol would have in such a solution, we do not know. Thymol is not very soluble (1 part in 1,010 of water), and it is doubtful whether it would prevent the growth of vegetative organisms. The morphin would not be changed to apomorphin.

TAX ON EARNED INCOME

To the Editor:—Our Deputy Collector of Internal Revenue advises me that the Collector of Internal Revenue under whom he serves has ruled that only 20 per cent. of the amount derived from professional services can be considered by a taxpayer as earned income in the computation of his federal income tax. Is this correct? ——, Iowa.

ANSWER.—It is not. The Commissioner of Internal Revenue has ruled that if both labor and capital are material income-producing factors in a taxpayer's business, the taxpayer may consider as a reasonable compensation for his personal services an amount not exceeding 20 per cent. of his share of the net profits. By way of illustration, however, the Commissioner cites the business of a physician as one in which capital is *not* a material income-producing factor. So far as relates to a business consisting principally of rendering personal services, in which the employment of capital is merely incidental, the Commissioner interprets the law to authorize the owner to treat his entire net profits as earned income.

PRESCRIPTION CONTAINING VARIOUS INGREDIENTS

To the Editor:—Will you kindly advise me whether the following prescription is satisfactory to be given to a patient internally?

Zinc sulphocarbolate (zinc phenolsulphonate)
Betanaphthol ..... āā gr. i
Sodium sulphite ..... gr. ii
Sig. One capsule, t. i. d., p. c.

Will there develop any toxic symptoms? Is there any incompatibility? D. J. LOUIS, M.D., Chicago.

ANSWER.—The prescription is needlessly complex. Zinc phenolsulphonate has no advantages over zinc sulphate. Sodium sulphite is seldom used internally; when acted on by gastric juice it yields sulphur dioxid. In the dosage prescribed, and not over a large period of time, the prescription would not be considered markedly "toxic" to a normal person. In the form prescribed, as a powder, there is no pharmaceutical incompatibility; in solution there would be.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ARIZONA: Phoenix, April 7-8. Sec., Dr. W. O. Sweek, 404 Heard Bldg., Phoenix.
COLORADO: Denver, April 7. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.
CONNECTICUT: Hartford, March 10-11. Sec., Dr. Robert L. Rowley, 79 Elm St., Hartford.
CONNECTICUT: New Haven, March 9. Sec., Homeopathic Board, Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.
DISTRICT OF COLUMBIA: Washington, April 14. Sec., Dr. Edgar P. Copeland, 104 Stoneleigh Court, Washington.
HAWAII: Honolulu, April 13. Sec., Dr. Guy C. Milnor, 401 Beretania St., Honolulu.
IDAHO: Boise, April 7. Dir., Mr. Charles Laurenson, Boise.
ILLINOIS: Chicago, April 14-16. Supt. of Regis., Mr. V. C. Michels, Springfield.
IOWA: Des Moines, March 18-20. Sec., Dr. Rodney P. Fagen, Capitol Bldg., Des Moines.
MAINE: Portland, March 10-11. Sec., Dr. Adam P. Leighton, Jr., 192 State Street, Portland.
MASSACHUSETTS: Boston, March 10-12. Sec., Dr. Charles E. Prior, 144 State House, Boston.
MINNESOTA: Minneapolis, April 7. Sec., Dr. Thomas McDavitt, 734 Lowry Bldg., St. Paul.
MONTANA: Helena, April 7. Sec., Dr. S. A. Cooney, Power Bldg., Helena.
NEW HAMPSHIRE: Concord, March 12-13. Sec., Dr. Charles Duncan, Concord.
NEW MEXICO: Santa Fe, April 13-14. Sec., Dr. W. T. Joyner, Roswell.
OKLAHOMA: Oklahoma City, April 14-15. Sec., Dr. J. M. Byrum, Shawnee.
RHODE ISLAND: Providence, April 2-3. Sec., Dr. B. U. Richards, State House, Providence.
UTAH: Salt Lake City, April 7. Dir., Mr. J. T. Hammond, State Capitol, Salt Lake City.

Connecticut November Examination

Dr. Robert L. Rowley, secretary, Connecticut Medical Examining Board, reports the written examination held at Hartford, Nov. 11-12, 1924. The examination covered 7 subjects and included 70 questions. An average of 75 per cent. was required to pass. Of the 41 candidates examined, 33 passed and 8 failed. Three candidates were licensed by endorsement of credentials. The following colleges were represented:

PASSED	Year Grad.	Per Cent.
Yale Univ. (1923, 4) 75.9, 81.4, 83.3, 87.4, (1924, 4) 77.7, 81.4, 84.3,		84.4
University of Kansas	(1923)	79.9
Tulane University	(1924)	81
Johns Hopkins University	(1919)	81.7
University of Maryland	(1921)	78.7
Harvard University	(1922)	83.6
Tufts College Medical School (1924, 6) 75, 75.5, 75.6, 78.1, 83.9,		84.4
University of Michigan Medical School	(1923)	80.6
University of Minnesota	(1907)	76.6
Columbia University (1923) 83,	(1924)	89.5
Cornell University	(1924)	83.5
University of Cincinnati	(1923)	83.3
Jefferson Medical College	(1924)	82.2
University of Vermont (1924, 2) 81.7,		84.2
Queen's University	(1922)	83.2
Hunan-Yale College of Medicine, China	(1922)*	78.9
University of Kiel, Germany	(1923)*	77
University of Budapest, Hungary	(1919)*	81.6
Imperial University of St. Petersburg, Russia	(1904)*	79.2

FAILED	Year Grad.	Per Cent.
Tufts College Medical School	(1924, 2)	71.3, 73.4
University and Bellevue Hospital Medical College	(1910)	75.4
McGill University	(1922)	70.6
University of Montreal	(1924)	61.6
University of Modena, Italy	(1923)*	24.3
University of Naples, Italy	(1922)*	67.4
Donskey Univ., Russia	(1920)*	64.2

ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement with
Harvard University	(1906)	Mass.
Tufts College Medical School	(1909)	Mass.
University of Pennsylvania	(1920)	New York

* Graduation not verified by A. M. A.

Philippine Islands November Examination

Dr. Jose V. Gloria, secretary, Philippine Islands Board of Medical Examiners, reports the written examination held at Manila, Nov. 11-14, 1924. The examination covered 16 subjects and included 80 questions. An average of 70 per

cent. was required to pass. Of the 50 candidates examined, 26 passed and 24 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
University of Nebraska		(1923)	71.1
University of St. Thomas, Manila	71.6, 72, 72.6, 74.6, 74.7, 74.9, 76.2, 77.1, 84.3, 88.8	(1924, 11)	70, 70, 70, 70.4, 71.5,
University of the Philippines, Manila	77.2, 78.1, 79.6, 81.7, 82.6, 85, 85.5, 85.8, 89.6	(1924, 10)	75.3,

College	FAILED	Year Grad.	Per Cent.
General Medical College		(1923)	67.4
Indiana University		(1924)	66.6
University of St. Thomas, Manila	65.8, (1924, 17) 47, 48.5, 54, 62.1, 62.2, 62.3, 63.3, 63.6, 64.5, 65, 65.4, 65.8, 65.9, 66.1, 66.5, 66.5, 69	(1921, 2)	47.1,
University of Munich, Germany		(1895)*	63.8, (1923)* 66.3
Tokyo Imperial University, Japan		(1923)*	54

* Graduation not verified by A. M. A.

Medical Economics

THE SUPPLY OF RURAL PHYSICIANS

Views of a Medical Educator

To the Editor:—Dr. Pusey has made a study of the apparently diminishing number of rural physicians. He ascribes this to the general urban movement in the United States and also to the increased cost and higher requirements of medical education.

As a remedy for this situation he suggests a decrease in the cost of medical education, an increase in the number of medical students, and, if necessary, the training of two classes of physicians, one with distinctly lower educational requirements. If these measures fail to remedy the situation, he favors the subsidization of the physician by the rural community.

I am fully in accord with Dr. Pusey in regretting the high cost of medical education; I really think that this obstacle could be materially reduced if we followed the business principles which are ordinarily used in the industries and which are employed in many colleges of arts and science; namely, thinning out the overhead through greater production, without, however, impairing the quality of the product.

I am unalterably opposed to any lowering of the requirements. The two year college course as a prerequirement for medical school admission has been greatly misunderstood. It has been considered merely as a tacking-on of additional college studies which in some vague way prepares the student for his future work as a physician. It is far more than this. It takes two years to lay the proper foundation in the sciences, so that the student may be prepared for their wider development in the medical course. It is impossible to crowd the necessary preparatory training in chemistry, physics and biology with other related subjects, into less time. One cannot give a year's training in half a year's time. The misfortune is that very little cultural training, which the physician sorely needs, can be given in a premedical course of two years; this is a far more warranted criticism of the two-year college requirement than to assert that such preparation is unnecessary.

The four-year medical course is all too short for a moderately satisfactory minimum medical training. The medical schools cannot be blamed for the time it takes to teach medicine; the progress of medicine has been so great in recent years that the time assigned is insufficient to give an adequate amount of the instruction required. Even the medical graduate himself admits that the four years demanded by medical schools at present are insufficient for his needs, for practically every graduate spends an additional year in hospital training before entering practice, although such internship is a legal requirement in only a few states. Fewer than 1 per cent. of our own graduates during the last five years have entered practice without this additional training.

The relative paucity of rural physicians which Dr. Pusey discusses at length is not due to the requirements of the medical schools but rather to the general cityward shift of the population. Physicians, like lawyers, bankers, merchants, laboring men and other classes, seek the city for what the city offers. Nothing thus far devised has checked this flow. I am sure that, so far as physicians are concerned, nothing but a change in the supply-and-demand relations can exert a corrective influence.

It is needless to say that I am opposed to training two different classes of physicians, one for the country and another for the city, one for the wealthier and another for the poorer classes. If there were two types of physicians, what would prevent the lower type from settling in the city? Who is going to force this product of a hurried delivery to practice in the rural communities? After all, if there is to be any difference, the country physician ought to have a better understanding of the processes of disease than the city physician, for the latter can readily obtain help from the experts of the city. Physicians will seek the rural districts just as soon as these sections are able to supply a suitable social, financial and scientific environment.

That all is not as serious as claimed is indicated by the report of Mayers and Harrison, who made an exhaustive study of the distribution of physicians in the United States under the auspices of the General Education Board. Dr. Pusey attempts to weaken this report by claiming that it omits the most crucial matter of all; namely, the effect exerted by the costliness of medical education on the distribution of physicians. Perhaps Dr. Pusey overlooked the fact that it was not the intention of the authors to prove or disprove a thesis, but rather to survey and analyze a condition. His own paper is confessedly written in defense of the thesis that the cost of medical education is a large, if not the chief factor, in the condition which all of us deplore. Moreover, there is no evidence that Dr. Pusey's conclusions are any more reliable than those arrived at by previous investigators. Since Dr. Pusey admits that his conclusions differ diametrically from those which have resulted from all previous studies in this field to which he refers, the burden rests on him to show where lurks the fallacy. Surely the well considered and careful investigations of Flexner and of Mayers and Harrison are worthy of trust until disproved.

The statistics of Mayers and Harrison show that of the graduates of 1916-1920, 11 per cent. are found in towns of less than 1,000 inhabitants, and Dr. Pusey himself estimates (THE JOURNAL, January 24, p. 281) "that a distribution of from 20 to 25 per cent. of physicians would take care adequately of rural medical needs" of even communities of 2,500 and less. Surely this is not such a great difference.

But statistics purporting to show the trend of distribution of physicians to rural districts are trustworthy in direct proportion to the length of the period from which they are drawn. Surely, therefore, any statistics covering the period during which the tremendous postwar readjustment in rural communities took place and during which farm conditions were at their lowest ebb, not only for medical practice but for farmers themselves, would invalidate altogether such statistics if an effort is made to use them as a basis for establishing the trend in distribution of physicians. A further factor that must reduce the percentage is the number of graduates still in hospital training, who may eventually engage in rural practice.

Mayers and Harrison conclude that, "taking a broad view of all factors, it seems reasonably clear that neither changes in the medical school constituency, nor changes in the mental attitude of the graduate induced by the current methods of instruction, have been more than a secondary influence in leading recent graduates to avoid rural locations. . . . Whatever may be thought, therefore, of the necessity for taking measures to meet the problem of rural medical service, it seems clear that the situation does not call for any present action in the field of medical education in the direction of a reduction in requirements or a lowering of standards."

In the St. Louis University School of Medicine we are trying to meet these problems by receiving as many qualified students as is consistent with standards and our facilities. Instead of reducing the number of students, we are taxing ourselves to the limit. The freshman and sophomore classes are in many instances divided into two sections, and thus,

even with modest means, we are able, by lessening the overhead, to train more men without impairing standards.

It is a practice in some schools to limit attendance to a smaller number, under the conviction that better instruction results and that a better class of students is assured. For our part, we have preferred to follow the plan of admitting the maximum number consistent with facilities and entrance standards, and permitting their continuance only on the basis of ability demonstrated through personal contact rather than through the presentation of more or less fallible college credits.

The poor boy's problem is not essentially different today from what it was a generation ago. The present expense requirement for the medical course of from $800 to $1,000 a year presents a problem little if any greater than the requirement of from $300 to $500 a year did twenty or twenty-five years ago.

That there are communities with insufficient physicians now cannot be denied, nor will it be denied that twenty-five years ago a similar condition existed. However, with improved transportation, telephones and hospital facilities, the seriousness of this situation will be less and less manifest. There may be some delay in establishing a new equilibrium between the medical needs of city and country; but whatever these stresses may be, it is unthinkable that any plan should be adopted that would lower the efficiency of the physician, whether he be trained for urban or for rural communities.

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Dean, St. Louis University School of Medicine.

The Practical Physician

To the Editor:—Such an open forum as is held at present in THE JOURNAL on the question of medical education is the only method of bringing out a cross-section of the mental attitude of the profession on this matter throughout the country.

I am sure that the ideas of Dr. Pusey have been seething in the minds of thousands, waiting for such an expression of opinion as he has put forth.

Such cycles in education must come as in other branches of knowledge. Up until fifteen years ago, we had an oversupply of physicians. Then the experiment of cutting down the number was enthusiastically received throughout the country, and now the pendulum has rightly swung to the opposite extreme.

The plan to teach the prospective doctor only medicine, and as early in his career as possible, would appear to me to furnish the only prospective way of making a doctor feel at home with the people of a rural community. The long association in city life, and the ideals of study for study's sake, engendered by our present curriculum, arouse hopes and dreams in the student's mind that are not conducive to rural practice.

From a practical standpoint it would seem to me that chemistry be finished in the high school, and that with the exit from the high school only medical subjects be taught. Of what possible use to the doctor, whose business it is to treat the common ailments in life, to have an accurate knowledge of the nerve supply, origin and distribution of the splenius capitis? One year should be sufficient for anatomy; one year of physiology is plenty to study the essential facts of known and proved physiologic action. Incidentally, most of us have relearned that the greater part of the physiology of a quarter of a century ago was faulty, and I suppose that we shall relearn the fact in the next decade that a good deal of our present physiology should be scrapped. Such knowledge is interesting, but how many of us have ever practiced it since beginning practice? How often do we ever stain a section for cancer? Yet, think of the time and worry spent on the subject of pathologic histology! The same reasoning applies to experimental pharmacology.

It is, indeed, intensely interesting for those of us who have "arrived" to sit about a table and discuss the pros and cons of the latest pharmacologic experiment; but has this vast amount of information made the detail man's trip among physicians any more arduous? Nor has the knowledge of physiologic and organic chemistry made the student a better physician. As a matter of fact, the extensive laboratories of medical schools are somewhat too elaborate, as far as their practical value is concerned, when it relates to the average everyday doctor. Of course, this does not apply to the one who strives to be in the forefront of his profession. Aside from the test tube and the blood smear, how much of the laboratory technic remains for the average doctor after ten years of his life? Not for you who dwell in the realms of scientific bliss, but for the average doctor! In England one is shocked to see how good doctors are made in schools with closet laboratories.

This is not meant to speak in a derogatory sense of laboratories, but it does mean that we have left the clinical field of medicine behind, in our attempt to magnify the laboratory.

I think the profession, for ages yet unborn, will owe a debt of everlasting gratitude to Dr. Pusey for his exposition.

THOMAS F. REILLY, M.D., New York.
Late Professor of Medicine,
Fordham University.

Book Notices

CLINICAL STUDIES FOR NURSES. A Text-Book for Second and Third Year Pupil Nurses and a Hand-Book for All Who Are Engaged in Caring for the Sick. By Charlotte A. Aikens, R.N. Fifth edition. Cloth. Price, $3.25, net. Pp. 598, with 199 illustrations. Philadelphia: W. B. Saunders Company, 1924.

After a general consideration of disease, the author discusses communicable, respiratory and constitutional diseases; the management of labor; gynecologic treatments; the newborn; diseases of children, and surgical procedures. Physical therapeutics, massage and the nursing of nervous diseases are presented in simple language. Here and there are pages for notes. Finally there are 600 questions based on the preceding pages, and three appendixes comprising hospital and invalid dietaries, the preparation of surgical material and miscellaneous notes

TRATADO CLINICO DE LAS ENFERMEDADES DEL INTESTINO. Por Adolfo Schmidt. Second edition revised and edited by Prof. Dr. C. von Noorden, Consejero Médico Secreto en Francfort del Mein, with the collaboration of Dr. Horst Strassner. Translated into Spanish by Dr. Francisco Tous Biaggi. Prologue by Dr. T. Hernando, Catedrático de la Facultad de Medicina, Madrid. Paper. Price, 50 pesetas. Pp. 944, with 177 illustrations. Barcelona: Manuel Marin, 1924.

Schmidt's book on diseases of the bowel—already in the second German edition and translated into Italian—has long ranked abroad as perhaps the outstanding contribution to this subject. The present Spanish translation is from the revision by von Noorden and Strassner. The revisers have modified to some extent Schmidt's original conceptions, especially as to pathologic physiology, roentgen-ray diagnosis, gastrogenous dyspepsia, functional disturbances, appendicitis and duodenal and jejunal ulcer. The book contains a wealth of data which no enterologist would like to miss.

LOCAL ANESTHESIA SIMPLIFIED. By John Jacob Posner, D.D.S., Chief of the Dental Department, Harlem Dispensary. Cloth. Price, $3.50. Pp. 114, with 56 illustrations. St. Louis: The C. V. Mosby Company, 1924.

This was written by a dentist for dentists, and relates entirely to local anesthesia as applied to dentistry. Unfortunately, many dentists have been altogether too slow in taking advantage of local anesthesia in their work. To these this little volume should be of great value, and the author is to be congratulated on the simple, clear and concise manner in which the tale is told.

A MANUAL OF OBSTETRICS. By John Cooke Hirst, M.D., F.A.C.S., Associate Professor of Gynecology and Obstetrics, Graduate School of Medicine, University of Pennsylvania. Second edition. Cloth. Price, $4.50. Pp. 551, with 229 illustrations. Philadelphia: W. B. Saunders Company, 1924.

This book is another protest against verbose and unwieldly textbooks, which the fashion of the day has made altogether too common. In conciseness of expression and in brevity,

the effort is wholly successful. Some changes, however, would add greatly to the effectiveness of the work. It would be desirable, for instance, to use the metric system and no other throughout. The metric system is the usage of science, and by its rigorous application such rule of thumb methods as locate the fundus by reference to the xiphoid and the umbilicus, as well as the confusion arising from double and even triple standards, could be avoided. The author states that the choice of the lateral or dorsal position in delviery is merely a matter of election. This may be true; but the almost universal abandonment of the lateral position is due to the recognition of an insuperable difficulty in keeping the field aseptic. The illustrations, too, are not always happily chosen, as in the cases in which the operator is shown without gloves. In some instances the pictures antedate the glove era, but in others the author merely perpetuates and thereby apparently endorses the bad technic of the original. The picture of the harelip nipple shield should be credited to Brophy, who devised it, rather than to the textbook that used it without this courtesy. Indeed, the book would be vastly improved by the introduction of more pictures especially devised for it. The author repeats also the tradition that "tongue-tie" (?) interferes with nursing, although Escherich demonstrated the fallacy of the theory in 1888. That was thirty-seven years ago. In the main, our obstetric doctrine is presented in its generally accepted order and substance and, except in cases such as eclampsia, in which the practice is not standardized, quite satisfactorily.

POUR DIMINUER LE RISQUE OPÉRATOIRE. Par Dupuy de Frenelle. Paper. Pp. 358, with 51 illustrations. Paris: A. Maloine et Fils, 1924.

The author has divided this study into preoperative observation, preparation and tests of function, choice of the various anesthetics, avoidance of infection, and treatment of operative shock. During observation, he advises various tests on the blood, kidneys, liver and other organs. Various forms of inhalation, and rectal, spinal and local anesthesia are considered in detail, including many mixtures not in general use in this country. The emphasis placed by the author on the anesthetic is shown by the fact that this discussion takes up half the contents. The prevention and treatment of infection by vaccines and chemical therapy are considered, and the correct technic for transfusion of blood and its substitutes is described, with the purpose of avoiding complications. The volume is practical, and offers many helpful suggestions.

ANESTHESIA FOR NURSES. By Colonel William Webster, D.S.O., M.D., C.M., Professor of Anesthesiology, University of Manitoba Medical School. Cloth. Price, $2. Pp. 153, with 41 illustrations. St. Louis: The C. V. Mosby Company, 1924.

This book is intended for nurses who are called on to administer anesthetics only occasionally. Not only inhalation anesthesia but also local and spinal analgesia are discussed in a lucid style. In the consideration of ethylene, however, the danger of explosions is not sufficiently emphasized, while not all will agree with the statement that ethylene has a pleasant odor. Chapters are devoted to the physiology of anesthesia, the preoperative and postoperative care of the patient, complications of anesthesia, medication and surgical shock. In a sympathetic and understanding way, the point of view of the patient is described, and throughout the book one recognizes the extensive experience of the author and his desire to cooperate with the surgeon to the fullest extent. Practical suggestions abound, and special consideration is given the anesthetization of children. The book is abundantly illustrated. Figure 3, however, which demonstrates Sylvester's method of artificial respiration, unintentionally brings out an important point; for in it the gown of the resuscitator is seen covering the face of the patient, thereby defeating the purpose of artificial respiration. In the photographs showing the anesthetist at work, it might have been better to have the anesthetist wear a mouthpiece; for any person, whether anesthetist, nurse or onlooker, who is close to the patient during an operation, should wear both cap and mouthpiece. While essentially written for nurses, the book may well serve as a guide for interns who are learning to administer anesthetics.

Miscellany

REPORT OF COMMITTEE ON DREYER MEASUREMENTS

The Committee on Dreyer Measurements in relation to life insurance underwriting practice conducted an investigation to determine whether overweight persons gave better or worse mortality records in accordance with variations in the length of the spine. The study comprised 38,062 overweight persons of all build classes, classified for (*a*) short men, (*b*) men of medium height, and (*c*) tall men. Each height-build group was further classified according to relative spine length; i. e., the percentage spine length of total height. At every step, suitable checks were made to insure accuracy of the tabulations and of secondary calculation. There were, in all, eighteen height-build groups.

The 38,062 overweight entrants gave an aggregate of 400,331 years life exposed to risk, or an average of 10.5 years. There were 4,571 actual deaths and 4,299 expected deaths, a ratio of 106.3 per cent. actual to expected mortality. The overweight short men had essentially the same mortality as the overweight men of medium height. Overweight tall men showed in every instance higher mortality, a finding in accordance with previous studies. Of the short and the medium height overweight persons, those with short spines had in every instance lower mortality than those with long spines. Among tall overweight persons, those with long spines had in every instance the better mortality. The committee does not know why short men and medium height men should behave so differently from the tall men on the score of mortality according to spine length. This is a matter for further investigation.

The committee seems to have disclosed a fundamental difference between tall men, on the one hand, and short and medium height men, on the other, in the significance of the spine lengths, but is inclined to believe that relative spine length is not a sufficient criterion of physical fitness among overweight persons, and that the chest capacity as expressed by the mean chest measurement also should be brought into the study. The committee proposes to try to determine how these two factors may be combined to assess various degrees of physical fitness, as measured by mortality.

CONFERENCE OF STATE AND PROVINCIAL HEALTH AUTHORITIES OF NORTH AMERICA FOR 1924

The proceedings of the Conference of Health Authorities for 1924 brings to light important data. A model ordinance for cities to control their milk supplies by the grading of milk is framed to encourage the pasteurization of all milk, and the production of good raw milk even if it is to be pasteurized. This ordinance has been adopted as the standard recommended by Alabama, and was suggested by the U. S. Public Health Service. It is printed in full, with suggestions as to means of obtaining the support of dairymen and city governments.

The Ohio act concerning the reporting of occupational diseases is quoted. The conference committee on industrial hygiene recommends uniform reports of occupational diseases for use throughout America. The industrial wastes causing disagreeable tastes in drinking waters are named, with data on their occurrence and on the legal basis for action by boards of health.

Twenty three states, provinces or other territorial units report in detail their recent progress in hygiene and sanitation. The conference committee on communicable diseases lists the varied points of view as to the age group to be given toxin-antitoxin without preliminary Schick testing, and as to the control and release of diphtheria carriers.

The committee on public health nursing details standards of training for the nurse on a well supervised staff, and for the nurse working alone. These requirements are divided

into the standards for 1924 and those recommended for 1930. The thirty-six states that have adopted the standard railway sanitary code (recommended by the conference in 1920 and amended in 1921) are here listed.

GOITER SURVEY IN UTAH

The inverse relation between the iodin content of a water supply and the incidence of simple goiter among children using it is strikingly proved by recent findings of the Utah State Board of Health in a survey of five towns in Utah County. The water consumed in Provo, Alpine and Santaquin comes from mountain springs, and contains from 18 to 61 parts of iodin per hundred billion parts of water. The goiter incidence of school children in these three towns is from 46 to 57 per cent. The town of Lakeview obtains water from artesian wells and Goshen from an open water shed. The iodin content of these waters is 216 and 250 parts per hundred billion of water. The goiter incidence of these towns is only 17 and 15 per cent., respectively. The iodin determinations were made by Dr. J. F. McClendon of the University of Minnesota from residues sent him by the Utah State Board of Health. Up to Feb. 1, 1925, the number of children examined was 95,488. Inspection and palpation of the neck showed 42.7 per cent. to have some degree of thyroid enlargement. Out of 30,413 school children between the ages of 10 and 14, 36.4 per cent. of the boys and 59.9 per cent. of the girls were recorded as positive. The Utah State Board of Health has issued copy for newspapers and leaflets for parents in an attempt to secure permission to administer iodin as a prophylactic to students in schools and colleges.

EUGENIC LAWS

The Wisconsin eugenic marriage law, passed in 1913, requiring men who apply for a marriage license to obtain a physician's certificate attesting their freedom from venereal disease, preceded similar laws in the same year in Oregon and North Dakota, and in Alabama in 1919, North Carolina and Wyoming in 1921, and Louisiana in 1924. Proposals of the same general character, however, have been voted down in thirty-seven legislatures since 1901. An investigation of the actual working of this law in Wisconsin has been made by Mr. Fred S. Hall for the Russell Sage Foundation, and published as a monograph, "Medical Certification for Marriage." This is based on a study of replies from 1,027 physicians in Wisconsin, which shows that these examinations are largely made by the "family doctor," and in a conscientious manner. While a number of these physicians believe that the law affords little actual protection to wives, 63.8 per cent. of the opinions expressed indicated that it was of some value in affording protection. The law is not ideal, says the *Boston Medical and Surgical Journal*, but it has made the people of Wisconsin think of the danger of venereal disease and it brings every man who contemplates marriage into contact with a physician.

REPORT OF ZAMBOANGA GENERAL HOSPITAL

The annual report of the Zamboanga General Hospital, Zamboanga, Philippine Islands, for 1923, describes the work of a sixty-bed hospital, located in the land of the Moros, not far from the equator. The natives no longer regard the hospital as a last resort. The opposition to necropsies by the families at first was strong, but it has been overcome by constant efforts to explain the benefits derived from these examinations. There was a total of 122 deaths in the hospital, and eighty-six, or 71 per cent., of these cases, came to necropsy. There were 814 cases of communicable disease admitted, hookworm heading the list with 403. In a trachoma campaign conducted by the hospital personnel among school children, in 1,908 examinations, 130 children with trachoma were found, 113 of whom were operated on.

Medicolegal

Evidence and Findings in Sponge Case

(Moore v. Ivey et al. (Texas), 264 S. W. R. 283)

The Court of Civil Appeals of Texas, in affirming a judgment for $8,750 in favor of Mrs. Ivey, plaintiff, states that in June, 1920, a physician operated on her for a falling of the uterus, at the same time removing the appendix and puncturing a small cyst on an ovary. In November, 1921, the defendant operated on her for the removal of a stone in the left kidney. June 13, 1922, another physician removed a piece of gauze that passed through her intestine, described as about 8 inches wide and from 32 to 34 inches long. The jury found that the defendant used and failed to remove the sponge or gauze before closing the incision; that his failure to remove it was negligence. Nothwithstanding the defendant's high character and reputation as a careful and eminent physician and surgeon, the court is not prepared to hold that the finding of the jury that the sponge was left in the plaintiff in the operation performed by the defendant was so against the weight and preponderance of the evidence as to be clearly wrong.

Assuming, as the jury had the right to do, (1) that the plaintiff told the truth when she testified (*a*) that in a short time after the operation in June, 1920, she was so greatly improved in health as to suffer no pain until about April or May, 1921; (*b*) that during such time she was able to and did do all of her own cooking, sewing and house cleaning, and also to care for her children, and (*c*) that she therefore discharged her servant; assuming (2) that the physician who performed the operation in June, 1920, told the truth when he said he used no such spong in his operation as passed from the plaintiff's intestine; and (3) accepting as true defendants' testimony (*a*) that before he performed his operation he had roentgenograms made of the plaintiff and thereby discovered a stone in her left kidney, and (*b*) that had there been an abscess formed around a sponge at the time he made his diagnosis and examination he would have been able to detect it by examination, this court thinks that the jury might have reasonably concluded that the sponge which passed from the intestine of the plaintiff was not in her body at the time the defendant made his diagnosis and roentgen-ray examination, just before he performed his operation, and, as a corollary, that the sponge was left in the body of the plaintiff in the defendant's operation.

The defendant contended that the finding of the jury that the sponge was left in the body of the plaintiff by him was based on a presumption drawn from conflicting evidence, and that the finding that he was guilty of negligence in not removing the sponge before closing the incision made by him was based on the presumption first mentioned, and that therefore the last-mentioned finding was a finding which had for its basis a presumption based on another presumption. The court holds, however, that the finding of the jury that the sponge was left in the body of the plaintiff in the operation performed by the defendant was not based on a presumption only, but rather on facts testified to by certain witnesses, which negatived that it was left by the physician who operated in June, 1920, and which, if true, proved the existence of the fact found by the jury in the first instance.

Since the jury found on sufficient evidence that the defendant left the sponge in the plaintiff, the court thinks that a further finding that such act constituted negligence on the part of the defendant necessarily followed.

Nor does this court think that the trial court abused the discretion reposed in it by statute in refusing a new trial because, while the jury was considering its verdict, (1) one juror mentioned that a neighbor had recovered a judgment for $15,000 because a physician had left a small piece of bone and a piece of gauze in her nose; (2) the jury discussed the probability that the defendant had insurance to protect him against loss in such cases, and discussed the probability that the plaintiff's attorney would get a portion of

any recovery which they might award, and (3) the jury referred to the fact that some physician was threatened with a suit in an appendicitis case, and that a verdict against the defendant might have a beneficial effect as tending to make physicians more careful.

Nurses, Nonmedical Members of Army Medical Corps and Privileged Communications—Expert Evidence

(Culver v. Union Pac. R. Co. (Neb.), 199 N. W. R. 794)

The Supreme Court of Nebraska, in reversing a judgment rendered on a verdict for $50,000 in favor of the plaintiff, says that the principal conflict in the evidence was over the question of whether the injury to his spinal cord was caused by a dislocation of the vertebrae in the dorsal region due to a sudden strain placed on him by attempting to lift a heavy weight in an improper position, as testified to by his medical witnesses, or whether it was caused by a complete transverse myelitis of the cord at the fifth dorsal vertebra as a result of syphilis, which was the opinion of the medical experts who testified on behalf of the defendant. The court holds that the question was one for the jury, there being sufficient evidence to support a verdict based on either theory. It says, too, that in a case involving medical expert testimony such as this, sometimes a question or remark by the court aids in the proper application by the jury of such testimony to the facts, and it is entirely proper for the trial judge to aid in preventing misconception by properly directed questions or remarks; but, of course, he should not go too far in this direction, especially in a criminal case.

Several questions were raised as to the privilege allowed confidential communications between physician and patient. At common law there was no such privilege. This rule still prevails when not changed by statute. The statutory privilege originated in a statute of New York passed in 1828. Its terms have been adopted in substance in many of the other states of the Union. Some courts have held that the statutes extending such a privilege to physicians or surgeons are remedial in their nature and should be liberally construed, while others take the view that they are in derogation of the common law, and an exception to the general rule; that the maxim that the expression of one thing is the exclusion of another should be applied and construed strictly; that unless the witness comes clearly within the class limited by the statute his testimony must be received, and that the burden of proving the right to the privilege is on the person seeking to exclude the evidence. In former decisions this court has seemed to rule in accordance with the view last expressed, and it believes it to be the proper one to take. A physician or surgeon, therefore, is a competent witness, except as to the class of confidential communications mentioned in Section 8840 of the Compiled Statutes of Nebraska of 1922, and also as to such communications if the privilege has been waived.

The legislature of Nebraska has not included professional or registered nurses within the privileged class, and a nurse, merely as such, is not within such class. But a different rule prevails where the nurse acts as one of the agents or assistants of the physician in charge. A nurse is often necessarily present at conversations between the patient and the physician with respect to the ailment or condition of a patient, and little good would be subserved if the lips of the physcian might be sealed by the statute as to such conversations, but the nurse or attendant might freely testify to all that was said and everything that was done. The purpose of the law is to protect the right of privacy; and while its scope should not be unduly extended, its very intention might be completely thwarted by the admission of testimony from this class of witnesses. In such case, if she received or heard confidential communications from a patient "necessary and proper to enable him (the physician) to discharge the functions of his office according to the usual course of practice," then the privilege extended to the physician extends equally to the nurse.

A sergeant of the United States Army Medical Corps, who is not a physician, who acts under the regulations of the army in furnishing to soldiers medical or prophylactic treatment for venereal diseases, and who does not fall within the rule as to assisting nurses herein announced, may testify to the fact that application was made to him for such treatment, and as to the nature of the service rendered by him, when such facts are material to throw some light on the question at issue.

Revocation of License Not Enjoined

(Hughes v. State Board of Medical Examiners et al. (Ga.), 123 S. E. R. 879)

The Supreme Court of Georgia affirms judgments in favor of the state board of medical examiners in separate suits brought by T. W. Hughes and N. A. Hughes, to enjoin the board from hearing a proceeding brought under Section 14 of the act of Aug. 20, 1918, to revoke their licenses. An injunction was sought on the ground (*a*) that the section of the act under which the proceedings were proposed was unconstitutional and void for certain designated reasons; (*b*) that the provisions making "conviction of crime involving moral turpitude" and "the publication and circulation of an advertisement relative to any disease of the sexual organs" are so vague, uncertain and indefinite as to render them void; (*c*) that the plaintiff had been granted a full pardon for the crime for which the revocation of his license was sought, and (*d*) that the defendant, unless restrained, would revoke the license of the plaintiff and thus deprive him of the right to practice his profession, which was a valuable property right. The court, however, in a brief syllabus, without any accompanying opinion, says that a court of equity will not enjoin the state board of medical examiners in such a case, as the plaintiff has adequate and complete remedies at law by which he can, in the first instance, set up the alleged matters of defense before the board of medical examiners, and, in the second instance, by an appeal from any judgment of said board adverse to him submit the case to the superior court of the county of his residence, where all matters of defense can be set up and determined.

Such a proceeding as this, the court says, is quasi criminal in character, and the general rule is that a court of equity will not enjoin prosecutions for criminal offenses or quasi-criminal proceedings; except that a court of equity will enjoin an unfounded prosecution for an alleged crime and the threatened continued prosecutions therefor until the person prosecuted has desisted from his efforts to pursue his occupation or profession, where the effect of such prosecution will injure or destroy the property of the person so prosecuted or deprive him of the legitimate enjoyment of his property or prevent him from pursuing his occupation or profession. In such a case, equity ignores the criminal feature, and exercises its jurisdiction solely with reference to the effect of the act on the property or business. This case, however, the court says, does not fall within the exceptions to the general rule, and for the reasons stated the court did not err in refusing to grant an injunction.

Society Proceedings

COMING MEETINGS

Alabama, Medical Association of the State of, Birmingham, April 21-24. Dr. D. L. Cannon, 519 Dexter Avenue, Montgomery, Acting Secretary.

American Association of Anatomists, Cleveland, April 9-11. Dr. Lewis H. Weed, Johns Hopkins Medical School, Baltimore, Secretary.

Arizona Medical Association, Bisbee, April 16-18. Dr. D. F. Harbridge, Goodrich Building, Phoenix, Secretary.

Hawaii, Medical Society of, Honolulu, April 24-27. Dr. Forest J. Pinkerton, 43-46 Young Building, Honolulu, Secretary.

Louisiana State Medical Society, New Orleans, April 21-23. Dr. P. T. Talbot, 1551 Canal Street, New Orleans, Secretary.

Maryland, Medical and Chirurgical Faculty of, Baltimore, April 28-30. Dr. J. A. Chatard, 1211 Cathedral Street, Baltimore, Secretary.

Minnesota State Medical Association, Minneapolis, April 27-29. Dr. E. A. Meyerding, 717 Commerce Building, St. Paul, Secretary.

North Carolina, Medical Society of the State of, Pinehurst, April 28-30. Dr. L. B. McBrayer, Southern Pines, Secretary.

South Carolina Medical Association, Spartanburg, April 21-23. Dr. E. A. Hines, Seneca, Secretary.

Tennessee State Medical Association, Nashville, April 14-16. Dr. J. F. Gallagher, Jackson Building, Nashville, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL for a period of three days. No foreign journals are available prior to 1920, nor domestic prior to 1923. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

29: 1-154 (Jan.) 1925

*Energy Metabolism of Normal New-Born Babies. J. R. Murlin, R. E. Conklin and M. E. Marsh, Rochester, N. Y.—p. 1.
*Studies in Tuberculosis. IV. Significance of Lymphangitis Occurring with Cutaneous Tuberculin Tests in Children. F. Eberson, San Francisco.—p. 29.
*Transitory Congestive Thyroid Enlargement. S. Z. Orgel, New York.—p. 41.
Case of Scaphocephaly with Malformations of Skeleton and Other Tissues. M. C. Putna and K. F. Pelkan, Boston.—p. 51.
Congenital Elephantiasis; Two Cases. T. Elterich, Sr., and C. C. Yount, Pittsburgh.—p. 59.
*Unusual Sequel of Meningitis: Lesion of Conus Medullaris. L. Wilkins, Baltimore.—p. 67.
*Salivary Urea Index in Children. J. K. Calvin and B. L. Isaacs, Chicago.—p. 70.
Effect of Change of Reaction on Growth of B. Coli and Staphylococcus Aureus. H. F. Helmholz and F. Millikin, Rochester, Minn.—p. 78.
*Prenatal Appendicitis with Rupture and Death. W. B. Hill and C. C. Mason, Long Beach, Calif.—p. 86.
Diseases of Genito-Urinary Tract in Children. R. D. Herrold, Chicago.—p. 88.

Energy Metabolism of New-Born Babies.—Two hundred and thirty-four observation periods on fifty new-born infants, ranging in age from 6 hours to 15 days, are recorded by Murlin et al. Of this number only ninety-eight periods with thirty-eight infants are described as truly basal; i. e., when the infant slept quietly throughout. The basal metabolism for these thirty-eight infants averaged 6.67 calories an hour, or 2 calories per kilogram and 29.16 calories per square meter of body surface (Lissauer) an hour. Applying statistical methods, it is found that surface area is as usual a slightly better measure of basal metabolism than body weight, and that, lumping all observations together, there is practically no correlation between heat production and the pulse rate. With regard to the influence of crying on energy metabolism, the interesting observation is made that in the average infant, active, healthy crying requires just as much expenditure of energy again as the basal (sleeping) metabolism. Expressed differently, crying 1 per cent. of the time raises the metabolism 1 per cent. Especial attention has been given to the effects of natural food and of supplementary feedings of lactose and dextrose solutions on the respiratory quotient and on the basal heat production. It has been found particularly difficult to raise the respiratory quotient by means of single supplementary feedings on the second and third days. The respiratory quotient accurately determined, however, may be taken as an index of the state of nutrition. If sufficient supplementary food is given to insure a respiratory quotient of 0.90 or above, within two hours and a half after feeding, the state of nutrition will be good and the child will be gaining weight. The dynamic action of ordinary feedings or of supplementary feedings within the first eight days is very small. The largest recorded was 12 per cent. from a feeding of 10 per cent. lactose. It is about the same from dextrose. Comparing the effect of small feedings (averaging 26.7 gm.) of food or of the sugar solutions with that of large feedings (averaging 51 gm.), the increase in the basal heat production, due to the addition of 24 gm., is approximately 7 per cent. (average).

Significance of Lymphangitis with Tuberculin Reactions.—The significance of lymphangitis with tuberculin reactions, Eberson believes, is to be considered from the standpoint of an infection with tuberculosis, which in children manifests itself as a glandular disease. The lymphatics are the distributors, and the phenomenon of lymphangitis speaks for an active tuberculous process. A glandular reaction following an injection of tuberculin is akin to a more pronounced skin reaction, and is, in turn, an integral part of the most pronounced reaction, lymphangitis, which results from an active sensitization of the lymph channels to the products of the tubercle bacillus.

Transitory Congestive Thyroid Enlargement.—In the case of five children, Orgel has observed a condition of the neck that does not seem to correspond with any of the known clinical entities in that region and yet simulates them very closely. This transient congestive enlargement, when unilateral, was more frequently right sided and gave the appearance of an enlarged lobe of the thyroid. When bilateral, the right side usually was larger than the left and gave the impression of a bilateral enlargement of the thyroid. In two instances there was a continuous mass across the entire front of the neck, as if both lateral lobes and isthmus were involved. During normal respiration, there is only slight, if any, fulness of the front of the neck. On forced expiration, however, such as occurs in crying, shouting, singing, counting aloud, boisterous laughter and by the playing of wind instruments, a tense tumor mass immediately appears. This tumor can be made still more prominent by forced efforts at expiration with the mouth and nose closed, as when lifting heavy weights or straining at stool. Hyperextension of the head during forcible expiration still further accentuates the mass. On resumption of normal respiration, the mass rapidly disappears. This transient bulging varies considerably in individual instances. The enlarged mass is resilient to the touch, and cannot be made to disappear by pressure. The congestion and consequent enlargement may be prevented by pressure on the upper portion of the external jugular veins while the child is quiet. The mass can be enlarged by pressing on the lower portion of the external jugular veins, as this dams the venous flow. On swallowing, the mass moves with the thyroid. This can be noted only if the act of swallowing occurs immediately after a forcible expiration and before the mass has entirely disappeared. It is dull to percussion, and it transmits tracheal breathing and voice. Four of the five patients had some other associated congenital anomaly.

Lesion of Conus Medullaris Sequel of Meningitis.—A case is reported by Wilkins in which a permanent lesion of the fourth and fifth sacral segments followed meningitis. Up to the time that the child, aged 2½ years, developed meningitis, she had always had perfect control of the bowels and bladder. After returning home from the hospital she had been incontinent, but after about a year she had gradually recovered control of the bowels. The loss of bladder control had persisted longer. An oval ulcer about 3 cm. long was situated in the anal fold along the median raphe, and extended from about 2 cm. posterior to the anus to the tip of the coccyx. Surrounding the ulcer was an area of total anesthesia with a radius of about 10 cm. The external sphincter appeared to be relaxed, and the anal reflex and the gluteal reflex could not be obtained. The knee jerks and the ankle jerks were elicited with difficulty. About fifteen months later, the child had perfect control of the bowels. There had been considerable improvement in the bladder control, but there was still incontinence during the day, though never at night. The anal reflex was still lacking. The area of complete anesthesia persisted, but no other trophic lesions had developed. The possibility that the lesion in this case was the result of trauma incurred during lumbar puncture cannot be excluded.

Salivary Urea Index in Children.—The results of Calvin and Isaacs' investigations on the salivary urea index in children agree essentially with the work done by Hench and Aldrich, more especially in adults. There is a distinct correspondence between the salivary urea index and the blood urea value. The salivary index definitely indictaes the presence or absence of urea retention in the body and in the blood. Although the salivary urea index does not give absolutely accurate figures for the blood urea, a clinically approximate estimate of the blood urea is obtained in retention cases by the application of the formula. The authors believe that this test is especially applicable to children because of the ease with which a specimen of saliva may be obtained, with no discomfort to the child, as contrasted with the disturbance usually created in obtaining a specimen of blood,

especially in ambulatory cases. As suggested by Hench and Aldrich, it can be used as a routine method in cases of suspected retention, or in any other cases (especially albuminurias) in which the nonprotein nitrogen content is desired. If high indexes are found, denoting retention or a borderline case, further blood studies may be made. In protracted cases, frequent salivary index tests may be made, with occasional blood urea checks. The salivary urea index should prove a very valuable adjuvant to the phenolsulphonephthalein test in the study of renal function.

Prenatal Appendicitis.—The patient in the case cited by Hill and Mason was the first born of twins. There was nothing abnormal about the pregnancy or delivery. The mother, aged 34, had always been in good health, and had had four other children all living and well. On delivery, the child's abdomen was markedly distended; otherwise nothing abnormal was noted on careful physical examination. During the first day, the child took sugar water and small amounts of a milk mixture but vomited practically all that was taken. The temperature remained normal; meconium was passed freely. The vomiting persisted. During the second day, the distension became more extreme; the use of enemas and the rectal tube did not diminish it. The temperature remained around 102 F., and the vomiting continued. The child died at 3: 15 p. m. of the third day, fifty-five hours after birth. The peritoneal cavity was found to be filled with straw-colored, clear fluid. The peritoneum was injected, was a bright pink, and was velvety to the touch. The intestines were matted together with many fibrinous adhesions. The stomach was distended with gas; the jejunum and ileum were distended to a point about 3 inches from the cecum. The terminal portion of the ileum was very dark red. The cecum was thickened, dark and swollen. The appendix was 2 inches long, dark and swollen. At a point about one-fourth inch from the junction of the appendix with the cecum, there was a small perforation on the medial side. The appendix was filled with pus and débris.

American Journal of Hygiene, Baltimore

5: 1-126 (Jan.) 1925

Comparison of Methods for Production of Antisheep Hemolysin. F. R. Stowell and M. I. Beattie, Berkeley, Calif.—p. 1.
*Laboratory Findings in Glandular Fever Epidemic. R. Gilbert and M. B. Coleman, Albany, N. Y.—p. 35.
Control of Hookworm Disease. XXXIV. Summary. W. W. Cort, Baltimore.—p. 49.
Human and Pig Ascaris. F. K. Payne, J. E. Ackert and E. Hartman. —p. 90.
Centering Points of Distributions by Age at Death. J. R. Miner, Baltimore.—p. 102.
Vital Statistics: Table for Calculating Errors. J. R. Miner, Baltimore. —p. 106.
*Experimental Measles. III. Fate of Measles Virus in Inoculated Rabbit and Its Viability Outside of Body. J. M. Scott and C. E. Simon, Baltimore.—p. 109.

Laboratory Findings in Glandular Fever.—In an epidemic of more than a hundred cases of glandular fever, a report was made by Gilbert and Coleman on sixty-three cases with regard to family groups, sex, age, date of onset, symptoms and duration of illness. Thirty-nine of forty-three children in these families, or 90.6 per cent., and fifteen of thirty-two adults, or 46.8 per cent., developed the disease. Blood serum from two convalescents failed to agglutinate *B. melitensis* and *B. tularense*. Cultural examinations were made on throat cultures and one specimen of pus from an axillary gland. *Streptococcus hemolyticus* was isolated from the pus and from four of the seven throat cultures. Streptococci producing methemoglobin were present in all except one of the seven throat cultures. One case of acute myelogenous leukemia, which occurred in the same county as the epidemic of glandular fever, is reported for purposes of comparison. Blood examinations were made in thirty of the cases. Seven, or 23.3 per cent., showed polynucleosis. An increase in the number of eosinophils was noted in 66 per cent. Twenty-two, or 73.3 per cent., showed an increase in lymphocytes. Thus, a lymphocytosis may be expected in some stage of glandular fever.

Experimental Measles; Fate of Virus.—Following the intravenous introduction into rabbits of what Scott and Simon regard as the causative agent of measles, this may remain demonstrable in the circulation up to and including the nineteenth day. The virus probably exists free in the plasma. Following the intravenous introduction into rabbits of the virus, this is demonstrable in the mucous membrane of the nasopharynx on the seventh day. It is apparently present in the tissues proper, irrespective of its appearance on the surface. Outside the body of the measles patient, the virus could be demonstrated in the discharge from the nose on soiled handkerchiefs. In the dust and air of the sickroom, the virus could not be demonstrated with certainty. The viability of the virus under ordinary conditions of temperature and exposure to diffuse daylight is of a low order. In the dried discharge from the nose of measles patients, it retains its infectivity for the rabbit for forty-eight hours. After a week, such material is no longer infective. Kept in the moist state, the virus seems to lose its infectivity even more rapidly. Saline extracts may remain infective for four days. It would seem as though a more intimate contact with the virus were necessary to secure infection than the mere inhalation of the air from the vicinity of the patient.

American Journal of Physiology, Baltimore

71: 229-477 (Jan. 1) 1925

Innervation of Smooth Muscle 1. Vagus Effects on Lower End of Esophagus, Cardia, Stomach and Lung. H. O. Veach, Boston.—p. 229.
*Effect of Long Continued Storage at Low Temperature on Vitamin-A Content of Eggs. D. B. Jones, J. C. Murphy and O. Moeller, Washington, D. C.—p. 265.
Comparative Studies on Pupillary Reaction in Tetrapods. T. Koppanyi and N. B. Laughton, Chicago.—p. 274.
*Shock from Fat Embolism of Vasomotor Center. W. T. Porter, Boston. —p. 277.
*Relation of External to Internal Secretion of Pancreas. II. Effect of Trypsin on Insulin and Its Bearing on Causation of Diabetes. A. A. Epstein, N. Rosenthal, E. H. Moechling and V. de Beck, New York.—p. 316.
Comparative Studies on Excitability of Forebrain. T. Koppanyi and J. F. Pearcy, Chicago.—p. 339.
*Eye Transplantation in Spotted Rat. T. Koppanyi and C. Baker, Chicago. —p. 344.
Chemical Studies of Oviduct of Hen. G. D. Buckner, J. H. Martin and A. M. Peter, Lexington, Ky.—p. 349.
Metabolism of Amonium Salts and of Urea in Man. E. F. Adolph, Pittsburgh.—p. 355.
Effect of Copulation, Pregnancy, Pseudopregnancy and Lactation on Voluntary Activity and Food Consumption of Albino Rat. J. R. Slonaker, Stanford University, Calif.—p. 362.
*Blood Volume Changes at High Altitude. H. P. Smith, A. E. Beit, H. R. Arnold and E. B. Carrier, San Francisco.—p. 395.
Growth and Age Involution of Thymus in Male and Female Pigeons. O. Riddle and P. Frey, Cold Spring Harbor, N. Y.—p. 413.
Effects of Cerebral Destruction on Sexual Behavior of Rabbits. I. Olfactory Bulbs. C. P. Stone, Stanford University, Calif.—p. 430.
Interruption of Pregnancy by Ovariectomy in Aplacental Opossum: Physiology of Implantation. C. Hartman, Austin, Texas.—p. 436.
Influence of Alkalis on Secretion and Composition of Gastric Juice. I. Effect of Prolonged Administration of Sodium Bicarbonate and Calcium Carbonate. T. E. Boyd, Chicago.—p. 455.
Id. II. Effects of Single Doses of Sodium Bicarbonate and Calcium Carbonate. T. E. Boyd, Chicago.—p. 464.
Use of Depancreatized Dogs as Test Objects for Insulin. F. N. Allan, Toronto.—p. 472.

Effect of Cold Storage on Vitamin Content of Eggs.—The results of feeding experiments done by Jones, Murphy and Moeller show that no serious deterioration had taken place in the vitamin A content of the eggs that had been held in storage for nine years in a frozen condition. In 0.25 gm. daily doses, the storage eggs were found to be as effective as fresh eggs in curing xerophthalmia. Even 0.1 gm., daily, caused noticeable improvement in the condition of the eyes, arrested the decline in weight, and caused a moderate resumption of growth, which continued from two to five weeks.

Shock from Fat Embolism of Vasomotor Center.—Porter records his observations on normal men, on animals in which the blood pressure has begun to fall from fat embolism, and in wounded men with severe shock. In his opinion, shock is the final common scene in various and quite distinct pathologic states. In the first order of these, the symptom complex is produced without injury to the vasomotor center. In this first order are hemorrhage, dilatation of the abdominal vessels without injury to the vasomotor paths, and injuries that sever the vasomotor paths running to the splanchnic area. In the second group of pathologic states

leading to shock the vasomotor center is from the beginning directly attacked. This group includes concussion of the vasomotor cells, fat embolism of the vasomotor region, and the action of certain poisons on the vasomotor cells. A systematic treatment of shock, used with marked success on wounded soldiers, is grounded on these principles: (*a*) the perception that the diastolic rather than the systolic arterial pressure should be the basis of diagnosis and treatment; (*b*) the recognition of a critical level of the diastolic blood pressure in shock; (*c*) the maintenance of the diastolic blood pressure somewhat, but not too much, above the critical level, as determined by very frequent readings of the diastolic pressure. Measures that raise the diastolic pressure in shock even 15 mm. may save life. A new remedy, often successful in raising the diastolic pressure to this extent, is found in the increased action of the respiratory pump, secured by augmenting the proportion of carbon dioxid in the inspired air.

Mechanism that Produces Diabetes.—On the basis of evidence obtained from experiments on animals, Epstein et al. assert that the mechanism producing diabetes consists of two stages, the first consisting of a simple glycogenolysis and sugar mobilization, and the second in a diminished sugar utilization. The first stage can arise from the passage of trypsin into the liver by the portal circulation; the second from a deficiency of insulin caused by a decreased production, or, what is probably more common, from a neutralization or inactivation of insulin by trypsin. This hypothesis concerning the pathogenesis of diabetes suggests a method of treatment of the disease directed at the underlying cause. Such a prospect seems to be enhanced by the striking effects produced by the injection of azin dyes into the pancreatic circulation. Azin dyes and other azin substances combine with trypsin. The dyes stain and combine with the zymogenic granules of the acinar cells. When such substances are infused into the pancreatic vessels, no glycosuria results. On the other hand, these substances do produce glycosuria if they are injected into the portal vein or if they reach the portal circulation by way of organs other than the pancreas. Comparing the effect of perfusion of the pancreas with the aforesaid dyes with that of saline solution, insulin and trypsin, the conclusion is reached that the controlling factor in the activity of insulin is trypsin. Injection of insulin mixed with azine dyes into the pancreatic artery does not cause glycosuria. The reason for this phenomenon seems to lie in the fact that these dyes fix the trypsin and prevent its mobilization into the pancreatic blood stream, thus hindering its effect on insulin.

Eye Transplantation.—Koppanyi and Baker show that the extirpated eyeballs of the Norwegian spotted rat can be replanted successfully, and in a small percentage of cases varying degrees of recovery obtained. Three animals with transplanted eyes showed negative phototaxis and a positive Waugh test, indicating some return of vision.

Blood Changes at High Altitudes.—The effect on hemoglobin, red blood cells, hematocrit and blood volume of four weeks' residence at high altitude was studied by Smith and his associates in six human subjects. The red count and hemoglobin rise almost proportionately throughout, reaching in three weeks a maximum of from 10 to 15 per cent. above the sea level value.

Annals of Clinical Medicine, Baltimore

3: 419-467 (Dec.) 1924

Value of Electrocardiogram in Diagnosis and Treatment of Diseases of Heart: Significance of Form of Ventricular Complex. F. N. Wilson and G. R. Herrmann, Ann Arbor, Mich.—p. 419.
Effort Syndrome; Clinical Course. W. B. Porter, Roanoke, Va.—p. 428.
*Chronic Carbon Monoxid Poisoning. H. B. Beck and W. Fort, Baltimore.—p. 437.
Thyroid and Hypophysial Pathology. A. Biedl, Prague.—p. 444.

Diagnosis of Carbon Monoxid Poisoning.—Beck and Fort caution not to make a diagnosis of chronic carbon monoxid poisoning without a history of exposure to gases containing carbon monoxid. An interesting and noteworthy feature in many of the patients is a pallor resembling a high grade of anemia, as well as a group of symptoms suggestive of anemia, in the presence of a red cell count of more than 5,000,000. This condition, which was present in several of the authors' patients, is of considerable diagnostic significance; and, in the opinion of several authorities, is almost pathognomonic. As there is no specific antidote for chronic carbon monoxid poisoning, treatment must necessarily be symptomatic.

Boston Medical and Surgical Journal

192: 199-246 (Jan. 29) 1925

Nullity of Psycho-Analysis as Scientific Concept. J. W. Courtney, Boston.—p. 199.
Community Aspects of Psychiatry. G. K. Pratt, Boston.—p. 206.
Intussusception. J. S. Stone, Hartford, Conn.—p. 210.
Intussusception: Herniotomy Through an Old Colostomy. J. M. Gile.—p. 213.
John Irvine Hunter, 1897-1924. H. Cushing.—p. 214.
Industrial Tuberculosis. C. E.-A. Winslow.—p. 215.
Gaseous Distention of Stomach and Intestines. M. A. McIver, E. B. Benedict and J. W. Cline, Jr.—p. 217.
Nasal Accessory Sinus Disease in Children. V. J. Irwin, Jr., Springfield.—p. 217.
Tapping the Abdomen. F. W. Palfrey, Boston.—p. 220.
Young Man in Obstetrics and Gynecology. H. Thoms, New Haven, Conn.—p. 222.

192: 247-286 (Feb. 5) 1925

Progress of Acute Appendicitis at Boston City Hospital from 1880 to Present Day. D. J. Duggan, Boston.—p. 247.
*Satisfactory Method for Examination of Feces for Gastro-Intestinal Parasitism. J. Gottlieb, Boston.—p. 249.
Loss of Hair from Common Causes. H. Goodman, New York.—p. 252.
Orthodontics and Malnutrition. W. R. P. Emerson.—p. 258.
Horace Wells. E. A. Wells, Boston.—p. 262.

Examination of Feces for Parasites.—Gottlieb has devised a modification of the salt flotation method to be used in cases of parasitism in which infestation is light and in which further concentration is necessary for determining the presence of ova after successful administration of anthelmintics. This method may, however, be employed advantageously in all cases in which the salt flotation method is applicable. A 19 or 20 gage, 3 inch, intravenous needle, threaded with a wire from base to point, is forced through the paraffined cup 1 cm. below the surface of the fluid level. The needle is directed upward at an angle of about 30 degrees until the surface film is reached. The wire is then withdrawn, and the film, together with the subjacent layer, is allowed to drain off until 1 c.c. of the suspension is obtained in a graduated centrifuge tube. This is diluted with 5 c.c. of water and centrifugalized at high speed for ten minutes, and the sediment is examined microscopically for parasites.

Iowa State Medical Society Journal, Des Moines

15: 1-46 (Jan.) 1925

Surgery versus Roentgen Ray and Radium Therapy in Treatment of Tumors of Uterus. G. W. Crile, Cleveland.—p. 1.
Rôle of Roentgen Rays in Treatment of Tumors of Uterus. U. V. Portmann, Cleveland.—p. 3.
Radium Therapy of Tumors of Uterus. T. E. Jones, Cleveland.—p. 6.
Incipient Cataract. G. F. Harkness, Davenport.—p. 9.
What Constitutes Constipation. P. B. Welch, Cedar Rapids.—p. 18.
Life Insurance Examination. G. E. Decker, Davenport.—p. 21.
Case of Pyonephrotic Stones. C. F. Huband, Ottumwa.—p. 25.

Journal of Bone and Joint Surgery, Boston

7: 1-240 (Jan.) 1925

Problem of Orthopedic Lecture. R. B. Osgood, Boston.—p. 5.
*Etiology of Pseudocoxalgia; Survey of Congenital Theory. G. Perkins, London.—p. 13.
Id. A Reply. M. Jansen, Leiden, Netherlands.—p. 33.
*Localized Affection of Spine Suggesting Osteochondritis of Vertebral Body; Clinical Aspects of Pott's Disease. J. Calve, Berck, France.—p. 41.
Regional and Field Block Anesthesia in Extremity Surgery. C. F. Eikenbary and M. Langworthy, Spokane, Wash.—p. 47.
*Pathogenesis of Skeletal Tuberculosis. A. Kolodny, Iowa City.—p. 53.
*Pseudocoxalgia. T. P. Noble, Rochester, Minn.—p. 70.
Two Hundred Cases of Paralytic Foot Stabilization After Method of Hoke. O. L. Miller, Gastonia and Charlotte, N. C.—p. 85.
*Metatarsus Primus Varus or Hallux Valgus. W. Truslow, Brooklyn.—p. 98.
*Anatomy of Lumbosacral Region in Relation to Sciatic Pain. M. S. Danforth, Providence, R. I., and P. D. Wilson, Boston.—p. 109.
*Metabolism in Arthritis. I. Influence of High Frequency Current on Certain Phases of General Metabolism. A. W. Rowe and R. S. Hunt, Boston.—p. 161.
Uncomplicated Dislocation of Inferior Radio-Ulnar Joint. A. Gibson, Winnipeg, Canada.—p. 180.
Two Cases of Recurrent Anterior Dislocation of Shoulder. W. W. Plummer and F. N. Potts, Buffalo.—p. 190.

Case of Anomalous Spinal Development Associated with Localized Twelfth Thoracic Nerve Symptoms. H. W. Marshall, Boston.—p. 199.
Knee Straightening Device. L. D. Smith, Boston.—p. 206.
*General Utility Incision for Exploration of Knee Joint. A. Krida, New York.—p. 212.
Instrument for Wedging Casts. A. E. Flagstad, St. Paul.—p. 215.
Wrench for Treatment of Certain Types of Colles' Fracture. H. T. Wikle, Brooklyn.—p. 218.

Etiology of Pseudocoxalgia.—Perkins concludes his paper with the statement that Dr. Murk Jansen's theory of flattened hip socket cannot be accepted.

Localized Affection of Spine.—Calve reports two cases of what he believes to be an affection which is to the spinal column what coxa plana is to the hip, and what Koehler's disease is to the foot. The clinical history of both cases is manifestly and incontestably that of an affection developed after birth. The cases also show a regeneration of bone in the later stages of the convalescence, and in one case an increase could be observed in roentgenograms taken two or three years apart. An infectious origin is, on the other hand, more probable.

Pathogenesis of Skeletal Tuberculosis.—Kolodny believes that the anatomic facts and the result of his investigation in relation to the most frequently involved skeletal regions in tuberculosis speak in a simple and positive way for the embolic theory of the pathogenesis of bone tuberculosis. When the blood supply is richer, other features being equal, there is a greater possibility of tuberculous involvement, and, hence, the primary focus in these regions is more frequent. It is evident that tuberculosis most frequently affects those parts of the skeleton which are especially adapted to the function of support and locomotion of the body, and which are under almost permanent physiologic strain. The vascularization of the costal cartilages proves that tuberculous foci in these regions are often of primary and not secondary nature.

Pseudocoxalgia.—Noble is convinced that trauma is undoubtedly instrumental in the causation of pseudocoxalgia. The disease passes through several definite phases. There is a tendency toward spontaneous cure. Pseudocoxalgia is one of the causes of osteoarthritis in adult life.

Metatarsus Primus Varus.—Truslow presents a new name, metatarsus primus varus, for a well known foot deformity, hallux valgus. The name indicates the situation of the primary focus of that deformity at the proximal end of the first metatarsal bone; it notes the constant varus position of that bone and the lateral bone weighing at its proximal joint, and considers this an anatomic variation and not the result of inflammation or of the use of faulty shoes; it further considers that the hallux valgus deformity is acquired, and that it may be the result of the varus of the first metatarsal, although faulty shoes and chronic arthritis may also be causative factors. Truslow maintains that any operative procedure that does not include the correction of the deformity at its proximal focus is unscientific and inadequate; and that simple cuneiform osteotomy at the metatarsocuneiform joint, with the redressement of certain secondary changes, is adequate and permanent. Other accompanying foot deformities are discussed.

Causes of Sciatic Pain.—The causes of sciatic pain were made the subject of study by Danforth and Wilson. The anatomy of the lumbosacral and sacro-iliac region was studied by actual dissection, and twenty-one patients falling in the category of sciatic pain without obvious cause were studied clinically. In all these cases there was evidence of disturbance in the region of the lower lumbar spine. In the majority of the cases this was substantiated by roentgenologic examination. Clinical evidence of nerve involvement was found in fifteen of the twenty-one cases. In many of the cases, signs were present which helped to localize the portion of the nerve affected. The areas of anesthesia or hyperesthesia, the changes in the reflexes, and the points of tenderness point to either the fourth or fifth lumbar roots and the first and second sacral roots as being the ones involved. The anatomic studies show that changes occurring at the lumbosacral junction have the greatest possibility of affecting nerve structures. Conditions existing in the intervertebral canal between the fourth and fifth vertebrae make that the next most likely point for nerve involvement. The solid nature of the sacrum offers little possibility for involvement of the sacral nerves during their exit, and the subsequent course of these nerves is such as to render their involvement unlikely. It seems to the authors that the evidence obtained in all the investigations indicates that sciatic pain of the type studied is a symptom of disturbance in the lower lumbar spine, and that the site of the lesion is most frequently the lumbosacral junction, and the nerve chiefly involved is the fifth lumbar.

Metabolism in Arthritis.—A study of the influence of the high frequency electric current, using the so-called "autocondensation" method of application, is recorded by Rowe and Hunt. This comprises blood and urine studies, together with the basal metabolism records of groups of normal controls and of arthritic subjects. Various effects were observed, which are apparently ascribable to the influence of the electrical stimulation, and which disappear with the cessation of its use. Cases showing an acute condition constitute an exception to the foregoing, the improvement being apparently progressive and more lasting. Among these changes were noted: (*a*) a diminution in the nitrogenous components of the blood; (*b*) an increase in the nitrogen and sulphur of the urine, and (*c*) the fact that the general elimination by the kidneys reflects the changes shown by nitrogen and sulphur. The phenolsulphonephthalein test is an exception, no changes being noted. The basal metabolic rate decreases during the treatment period, and only in the control group does it return to the pretreatment level. The blood sugar concentraitons in the arthritic group show changes proportional to their initial level. Certain speculations are offered in possible explanation of the observed phenomena.

Incision of Knee Joint.—The incision of the knee joint described by Krida permits adequate exploration of the joint without transverse section of the extensor apparatus or splitting the patella. With the limb extended, the incision begins 4 inches above the patella in the line between the rectus femoris and vastus internus, passes downward to within one-half inch of the superior border of the patella, then sweeps inwardly around the patella about one-half inch from its inner border, and then downward to the tibial tubercle. The joint is entered alongside the patella, and the capsule and intermuscular junction are split with scissors to the upper border of the quadriceps pouch, a small section of the rectus femoris tendon being left attached to the vastus internus. The incision is similarly extended downward alongside the patella tendon to the tibial tubercle.

Journal of Urology, Baltimore

13: 1-129 (Jan.) 1925

*Influence of Nerves on Kidney Function in Relation to Problem of Renal Sympathectomy. L. F. Milliken and W. G. Karr, Philadelphia. —p. 1.
Malignant Papilloma of Kidney Pelvis. G. G. Smith, Boston, and A. C. Gilbert, Dallas, Texas.—p. 25.
*Injury to Vena Cava During Nephrectomy. A. L. Chute, Boston.—p. 43.
Case of Hydronephrosis in Kidney with Extrarenal Calices. D. N. Eisendrath, Chicago.—p. 51.
Localization of Renal Calculi by Aid of Roentgen-Ray Films Made During Operations. W. C. Quinby, Boston.—p. 59.
*Two Cases Representing Unusual Types of Renal Tuberculosis. H. G. Bugbee, New York.—p. 61.
Method for Accurate Collection of Bladder Leakage of Phenolsulphonephthalein in Kidney Studies. R. V. Day, Los Angeles.—p. 73.
Phthaleinometer for Rapid Estimation of Phenolsulphonephthalein Test. H. H. Young and C. F. Elvers, Baltimore.—p. 79.
Use of Tunneled Bougies and Hook-Catheter in Treatment of Ureteral Calculi. R. L. Dourmashkin, New York.—p. 85.
Pathology of Posterior Urethra. G. L. Livermore, Memphis, Tenn.—p. 111.
Standard of Cure in Gonorrhea. R. A. Kilduffe, Pittsburgh.—p. 121.

Influence of Nerves on Kidney Function.—Additional evidence is given by Milliken and Karr that renal sympathectomy, in experimental animals, produces certain definite changes in kidney function, which continue for an indefinite period. No untoward results follow the operation, even when the two kidneys are deprived of their nerve supply at the same time. Periarterial sympathectomy has given good results in certain peripheral sensory and circulatory abnormalities, and renal sympathectomy is theoretically practicable

and is indicated in analogous kidney conditions. The changes in kidney function produced by section of the renal sympathetics would seem to be of a nature valuable in correcting the dysfunction in those conditions of kidney disease mentioned in this paper; and since there appear to be no contraindications, the operation would seem to be entirely justifiable and, in many cases, preferable to any other method of operative procedure.

Injury of Vena Cava During Nephrectomy.—Chute reports four instances in which, during a difficult nephrectomy, the vena cava was injured. The rent was repaired. Two of the patients made a good recovery. The other two died soon after the completion of the operation. Chute says that these wounds are probably best treated by suture, whenever this is possible. In a certain number of cases this is impossible, and the edges of the incision must be brought together with forceps. He advises that these clamps be left in place for at least seven days.

Renal Tuberculosis.—The two cases reported by Bugbee presented a chronic tuberculous inflammation of the kidney, almost free from necrosis, with no cavity formation and with no involvement of the lower urinary tract. No tubercle bacilli could be isolated by examination of the urine, or demonstrated by guinea-pig inoculation. In one case the symptoms and findings seemed to be characteristic of a tumor of the renal pelvis with persistent hematuria as the predominating symptom, and in the second case the kidney was almost entirely replaced by fat. They demonstrate a type of infection quite different from the usual picture of renal tuberculosis with active lesions in the lower urinary tract and its accompanying distressing urinary symptoms. They lead to the belief that tuberculosis of the kidney probably exists much more frequently than is generally conceded, that a correct diagnosis of this type of case is often overlooked, and that such a low grade tuberculous renal infection is self-limiting in some cases.

Kansas Medical Society Journal, Topeka

25: 1-32 (Jan.) 1925

Local Anesthesia in Abdominal Surgery. W. J. Gates, Kansas City.—p. 1.
Non-Anaphenamin in Treatment of Pyelitis. R. W. Hissem, Wichita.—p. 3.
Analysis of Reported Cases of Diarrhea and Enteritis (Under Two Years) Occurring in Kansas City, Kan., During June, July and August, 1924. L. B. Glynne.—p. 7.
Case of Spinal Cord Injury. F. L. Flack, Coffeyville.—p. 10.
Case of Paresis Treated with Tryparsamide. A. L. Shoog.—p. 15.

New York State Journal of Medicine, New York

25: 49-102 (Jan. 23) 1925

Low Cervical Cesarean Section; Its Advantages. J. K. Quigley, Rochester.—p. 49.
*Aspiration in Gynecology. J. V. D. Young, New York.—p. 54.
*Treatment of Bronchomycosis with Roentgen Ray. A. C. Howe and J. M. Schmidt, Brooklyn.—p. 60.
Early Neurologic Manifestations of Syphilis. J. L. Eckel, Buffalo.—p. 63.
Kidney and Prostate Operations Under Regional Anesthesia. O. S. Lowsley, New York.—p. 70.

Cervical Aspiration in Gynecology.—Observation and study of intermittent aspiratory hyperemia in gynecology lead Young to conclude that intermittent aspiratory hyperemia is a definite and distinct method of treatment in gynecology of great value. It is more than simple suction with a shallow cup, or pumping mucus from the cervical canal. There is a true cervical aspiration and stimulation, with resultant effect on the whole uterus. The degree of aspiratory intensity may be regulated to a nicety. Drainage of the cervical glands, canal and uterine cavity may be accomplished. The tone of the uterine musculature is improved. The uterine circulation is improved secondarily, to the betterment of the musculature. Local infection of the cervix is relieved. The method is practical, logical and effective in gynecology. It is easy of application. Intermittent aspiratory hyperemia is an addition to, not a substitute for, other methods of treatment of proved value.

Treatment of Bronchomycosis with Roentgen Ray.—Three cases of chronic bronchitis are reported by Howe and Schmidt in which fungi were demonstrated in the sputum. The fungi have disappeared following treatment with the roentgen ray. The disappearance has been followed with a remarkable improvement in the bronchitis.

Public Health Journal, Toronto

16: 1-49 (Jan.) 1925

Epidemiology and Immunology of Scarlet Fever. W. R. Hodge, Toronto.—p. 1.
Dick Test. A. H. Graham, Toronto.—p. 7.
Bacteriology of Scarlet Fever. G. H. Eagles, Toronto.—p. 13.
*Prematurity as Factor in Infant Mortality. H. C. Cruikshank, Toronto.—p. 22.
*Malnutrition in Children of School Age. C. S. Macdougall, Toronto.—p. 25.
Water and Water Supplies. H. S. Hancock, Jr., Fort William, Ont.—p. 36.

Prematurity as Factor in Infant Mortality.—In the last ten years the number of deaths under 1 year from all causes, per thousand live births registered in Toronto, has dropped from 111.5 to 74.2, a reduction of 37.3. As the number of deaths from other infantile conditions has decreased, the proportion of infant deaths due to prematurity has gradually mounted. In 1914, 16.5 per cent. were due to this cause, and in 1923, 26.4 per cent. The actual figures are even more striking. Last year, out of a total of 973 deaths under 1 year, 257 resulted from prematurity. About 65 per cent. of the babies born in Toronto are born at home. In view of this, it is interesting to note that 138, or 54 per cent., of the 257 premature deaths in 1923 occurred at home.

Malnutrition in School Children.—Macdougall has reviewed the histories of 370 patients who attended the nutritional clinic at the Hospital for Sick Children in Toronto. The causes of malnutrition in order of their prevalence were: mismanagement, physical defects, improper diet and faulty food habits, overfatigue and faulty health habits. Family traits played little or no part. Diseased tonsils and adenoids, and teeth were the main physical defects causing malnutrition. Macdougall urges that every child applying for entrance to the public school be examined in the presence of his parents and required to be up to normal weight before he is allowed to assume the burden of full school work.

Southern Medical Journal, Birmingham, Ala.

18: 1-86 (Jan.) 1925

Some Southern Medical Problems. C. L. Minor, Asheville, N. C.—p. 1.
Influence of Environment in Medical Education. G. C. Robinson, Nashville.—p. 9.
Purpose of Medical Education. C. C. Bass, New Orleans.—p. 12.
Dr. Isadore Dyer. R. Matas, New Orleans.—p. 15.
Asthenic Children. I. A. Abt, Chicago.—p. 19.
Status of Teaching of Pediatrics in South. P. F. Barbour, Louisville.—p. 23.
Is Present Generation Attaining Higher or Lower Intellectual Heights and Levels Than Past Generations? B. R. Tucker, Richmond.—p. 26.
Problem of Early Diagnosis of Gastric Cancer. J. E. Knighton, Shreveport, La.—p. 30.
Therapeutic Suggestions for Dermatologists. E. S. Lain, Oklahoma City.—p. 31.
*Data Concerning Cycle of Schistosoma Mansoni. J. Iturbe, Caracas, Venezuela.—p. 34.
Career of Surgeon. J. S. Horsley, Richmond, Va.—p. 39.
Future of Obstetrics as Specialty and in General Practice. B. C. Hirst, Philadelphia.—p. 41.
Hemorrhage Hazard in Prostatectomy. A. I. Folsom, Dallas.—p. 45.
*Triple and Quadruple Amputations. S. S. Gale, Roanoke, Va.—p. 48.
Significance of Nose. F. G. Hodgson, Atlanta.—p. 51.
Study of Morphology of Mastoid. J. J. Shea, Memphis.—p. 53.

Incidence of Schistosomiasis in Venezuela.—In 600 analyses of feces made in Iturbe's laboratory, infection with schistosomiasis has been present in only five cases. This diminution of schistosomiasis in Caracas is said to be due to the following causes: 1. The publication of the way in which the malady was transmitted. 2. The measures adopted by the sanitary authorities, which forbade cultivation of lands which were veritable breeding places of the intermediate host, and which maintained a high percentage of infection among the farming population, in some cases 30 per cent. The draining of those lands effected since 1921, and the prohibition of all further cultivation of irrigated soil have brought about the total disappearance of the intermediate host. 3. The systematic application of the method of Christopherson to all infected persons. Indeed, the treatment with antimony and potassium tartrate (tartar emetic) has, as a general rule, effected its

cure, and it is, in Iturbe's opinion, the only process capable of producing an efficacious prophylaxis.

Triple and Quadruple Amputations.—Gale records a case of primary triple amputation of both legs and right arm with recovery. The patient was run over by railroad cars and sustained a crush of the left leg at the middle third. The right leg was crushed just above the knee. The right arm was crushed from the hand up to about the middle third of the arm, and there were many cuts on the face and head. The patient was admitted to the hospital, about thirty minutes after the receipt of the injury. He was suffering greatly from shock, but was bleeding very little. The patient was put to bed between warm blankets, external heat was applied, and the foot of the bed was elevated. Five hundred cubic centimeters of blood was transfused by the sodium citrate method, just before the ether was started. A simultaneous triple amputation was done, the time of operation being forty-five minutes. The left leg was amputated at its lower third; the right thigh at the juncture of the lower with the middle third, and the right arm at the upper third. Recovery was complete in two months.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Children's Diseases, London

21: 241-320 (Oct.-Dec.) 1924

*Mongolism. T. Brushfield.—p. 241.
*Investigation of Fifty Cases of Mongolian Imbecility. D. M. Berry.—p. 259.
Home Care and Treatment of Physically Defective Infants and Young Children. J. Thomson.—p. 263.
Postoperative Acidosis in Children. P. C. Jeans and K. H. Tallerman.—p. 268.
Infective Hepatitis with Cirrhosis: Subacute Liver Atrophy (Necrosis), with Consequent Cirrhosis and Commencing Regeneration of Liver Cells (Nodular Hyperplasia). R. Hutchison and D. Paterson.—p. 275.
Anteroposterior Tilt of Pelvis: Variations, and Their Clinical Significance in Children. E. F. Cyriax.—p. 279.

Mongolism.—One hundred and fifty-one cases of mongolism were analyzed by Brushfield. In a few cases it was also possible to make necropsy observations. A patent foramen ovale was found in seven out of eight hearts examined—four with a plain circular opening, three with a valvelike opening. The gross anatomic variations noted in the brain were: reduction in number and simplicity of the convolutions; no secondary convolutions; shallow sulci; cerebellum small and more exposed. All brains were symmetrical; there were no changes in the pia mater or dura mater; the lateral ventricles were normal. Microscopic examinations of the cerebral cortex and endocrine glands are still in progress and will be reported on later.

Cause of Mongolian Imbecility.—A series of fifty mongolian idiots was analyzed by Berry. Very little evidence was obtained to support the prewar theory that mongolism was due to the mother reaching the end of the childbearing period. Much evidence was obtained that it was the father who was sexually defunct, as in two thirds of the cases he had served in the army or navy in the war, and in nearly half he had suffered from shell shock, while the mothers were young and healthy.

British Journal of Tuberculosis, London

19: 1-64 (Jan.) 1925

George Bodington: Pioneer of Sanatorium Treatment of Pulmonary Tuberculosis. R. J. Cyriax.—p. 1.
Tuberculosis Work in Denmark. F. T. H. Wood.—p. 16.
Ultraviolet Rays and Treatment of Tuberculosis. P. Hall.—p. 21.
Present Position of Institutional Treatment. G. L. Cox.—p. 27.
Erythema Nodosum; Its Association with Tuberculosis. J. A. Watt.—p. 37.
Nontherapeutic Pneumothorax Connected with Tuberculosis. F. P. Weber.—p. 41.

British Medical Journal, London

1: 97-144 (Jan. 17) 1925

*Influence of Chemical Research on Medicine and Forensic Medicine. W. Willcox.—p. 97.
*Chronic Pelvic Pain in Relation to Neurasthenia. R. P. R. Lyle.—p. 100.
*Muscular Exercise in Diabetes Mellitus. K. S. Hetzel.—p. 102.
*Blackwater Fever. E. P. Carmody.—p. 106.
*Contact Cases of Leprosy in British Isles. J. M. H. MacLeod.—p. 107.
Case of Myasthenia Gravis. A. H. Douthwaite.—p. 108.
*Treatment of Neuritis by Electrolysis. W. B. Jones.—p. 109.
Melanotic Sarcoma of Septum Nasi. P. R. W. de Santi.—p. 109.
Mental Sequelae of Epidemic Encephalitis in Children. A. J. Hall.—p. 110.
Treatment of Sprue with Calcium and Parathyroid Extract. F. D. Bana.—p. 111.
*Perforation of Chronic Duodenal Ulcer in Boy. J. L. O'Flyn.—p. 112.
Air Embolism Following Urethroscopy. K. V. Trubshaw.—p. 112.

Relationship Between Chemical Research and Medicine.—Willcox asserts that the relationship between chemical research and medicine is so close that advances in each occur *pari passu*. At present, medicine is looking toward chemistry and its applied branches for great and immediate advances. In chemistry, as in medicine, specialization of work has become necessary, since the fields of each are so vast. Pure chemistry has as its religion absolute and scientific accuracy of work. It is necessary that this spirit of scientific accuracy should be the foundation of all those branches of chemistry applied to medicine.

Chronic Pelvic Pain in Relation to Neurasthenia.—Lyle feels that large numbers of unnecessary operations have been and are being performed for chronic pelvic pain, owing to the operator's not recognizing the general condition of the patient and ascribing all the various symptoms that she complains of to some little pelvic abnormality, which could not in any way, even with the most vivid imagination, be rightfully attributed as the cause of her general condition. In other words, operations are being performed from an entirely wrong diagnosis. In many cases a careful examination of the pelvis, and an assurance that she has no pelvic disease and that the condition is merely due to worry or nervousness or constipation, will make the patient feel quite well. In other cases a mixture of potassium bromid and magnesium sulphate, together with fresh air and outdoor exercise, telling her not to tire or fatigue herself in any way and to stop worrying, will generally be sufficient treatment.

Muscular Exercise in Diabetes Mellitus.—Experiments done by Hetzel show that in a diabetic patient whose diet contains a moderate proportion of carbohydrate and who receives an adequate supply of insulin the effect of exercise is beneficial, rapidly lowering the blood glucose to a normal level and diminishing the production and, therefore, the excretion of ketones and so rendering tissue metabolism more complete. But in a patient even with adequate carbohydrate foodstuff or carbohydrate stores whose diabetes is moderately severe and who is without sufficient insulin, endogenous or exogenous, exercise produces little or no effect on blood glucose, and ketosis is increased. The author's conception of hypoglycemia occurring from an excessive amount of insulin is that the blood is being depleted of its glucose more rapidly than the glycogen stores can be transformed into glucose, and so the latter process cannot keep pace with the former, and the blood sugar falls to the hypoglycemic level and below it.

Blackwater Fever.—Carmody is confident that quinin does not cause this disease, or even act as the fulminant. He thinks the reason this idea has been entertained is that, the premonitory symptoms being indistinguishable from malaria, quinin is taken, and the onset of blackwater is credited to it.

Contact Cases of Leprosy.—Three contact cases of leprosy are reported by MacLeod to show the danger of belittling the contagiosity of the disease, and of gainsaying the risk connected with intimate association with lepers.

Treatment of Neuritis by Electrolysis.—Jones' experiments have convinced him that treatment by electrolysis gives good promise of relief in cases in which the lesion is of the interstitial type, caused by inflammation of the nerve sheath.

Perforation of Chronic Duodenal Ulcer.—O'Flyn cites a case which he says supports the theory of congenital predisposition to duodenal ulcer. His patient was only 14. The ulcer, the existence of which was not suspected, perforated suddenly. O'Flyn made a diagnosis of perforated appendix with general peritonitis, and at operation found a normal appendix and a perforated duodenal ulcer.

China Medical Journal, Shanghai

38: 961-1060 (Dec.) 1924

*Survey of Human Intestinal Protozoa in Peking, China. J. F. Kessel and R. Svensson.—p. 961.
*Periarterial Sympathectomy for Trophic Ulcerations of Extremities. H. Black.—p. 983.
*Beriberi in Chinese Women and Its Relation to Childbearing. J. A. Hofmann.—p. 987.
*Etiology of Tetany. E. W. H. Cruickshank.—p. 994.
Dementia Paralytica. S. D. Sturton.—p. 1004.
Indications for Operation in Cataract. R. A. Peterson.—p. 1007.
Safe Pneumatic Tourniquet. L. O. Wilderson.—p. 1009.

Intestinal Parasitism in China.—Kessel and Svensson record the intestinal protozoan infestations of 1,037 cases. The percentages of protozoan infestation among the Chinese were: *Endolimix nana*, 40.1 per cent.; *Endamoeba dysenteriae*, 29.5 per cent.; *Councilmania lafleuri*, 19.2 per cent.; *Endamoeba coli*, 11.77 per cent.; *Iodamoeba bütschlii*, 13 per cent.; *Giardia intestinalis*, 10 per cent.; *Chilomastix mesnili*, 6 per cent., and *Trichomonas hominis*, 4.5 per cent. Protozoan infestation among the Chinese in Peking is about equal to that reported from some tropical countries, while it is lower than that reported from some other tropical regions. Infestations among the foreign adults examined in Peking are just about equal to the infestations of British and American troops returned from France and the Near East. Infestation with *Endamoeba dysenteriae* among the Chinese examined in Peking is from three to four times as great as among the civilian population in England and in the United States. The authors hint at the possible development of racial immunity to clinical amebiasis on the part of the Chinese.

Periarterial Sympathectomy for Trophic Ulcers.—Black reports ten cases in which periarterial sympathectomy was done with great benefit to the patient. In two of these cases the operation was performed for the ulcerations of leprosy. The results were remarkable. Each of these two patients had lost several of his toes, and the stumps had remained ulcerated for six or more months; within two weeks or so after periarterial sympathectomy, the stumps were healed, although the local treatment remained unchanged. This is the first report of performing this operation in leprosy.

Effect of Beriberi on Childbearing.—An analysis of thirty-eight cases leads Hofmann to believe that childbearing is not a predisposing cause to beriberi. Childbearing, however, does seem to make beriberi a much more formidable disease.

Guanidin Intoxication Theory of Tetany.—The various theories advanced to explain the incidence of tetany are reviewed by Cruickshank. His experiments show that calcium deficiency is a sign and not the cause of the tetany. He apparently favors the guanidin intoxication theory. It would seem that guanidin-transforming agents are absent in tetany, and it may be that a ferment or catalytic agent similar to or identical with arginase is produced by the parathyroid glands.

Indian Medical Gazette, Calcutta

60: 1-52 (Jan.) 1925

Epidemic Dropsy and Beriberi. H. W. Acton and R. N. Chopra.—p. 1.
Serum Reactions in Syphilis. R. B. Lloyd.—p. 19.
Successful Treatment of Kala-Azar with Stibamine Glucoside. L. E. Napier.—p. 24.
Case of Frambesia in Nicobar Islands. F. A. Barker.—p. 29.
Case of Typhoid Septicemia Without Typhoid Ulcers. W. Fletcher and J. E. Lesslar.—p. 29.
Case of Muscular Dystrophy, Scapulohumoral Type. J. P. Cullen.—p. 31.
Useful Hypodermic Outfit. J. W. Tomb.—p. 32.

Lancet, London

1: 61-110 (Jan. 10) 1925

Present Day Electrotherapeutics. S. Melville.—p. 61.
*Babinski or Extensor Form of Plantar Response in Toxic States Apart from Organic Disease of Pyramidal Tract System. T. R. Elliott and F. M. R. Walshe.—p. 65.
Venereal Diseases in Men and Women: Age Incidence. D. White.—p. 69.
*Intussusception. G. M. Gray.—p. 71.
*Recompression of Tuberculous Lung by Artificial Pneumothorax After Interval of More Than Six Years. R. C. Hutchinson.—p. 74.
*Tropical Sprue and Pernicious Anemia. C. Elders.—p. 75.
Diabetic Coma Without Ketonuria. G. Evans.—p. 77.
Case of Membranous Stomatitis in Infant Six Months Old. J. W. Tomb.—p. 77.

Babinski Reflex in Toxic States.—According to Elliott and Walshe, an extensor plantar response characterizes the toxic state of coma without epileptiform fits ("cholemia") that may arise when the metabolic functions of the liver are seriously impaired by acute or chronic diseases of that organ. An extensor response does not occur in diabetic coma, nor in uremia, except when the latter is associated with epileptiform fits. It has been seen in eclampsia with fits. Delayed chloroform poisoning, sulphonal poisoning and coal gas poisoning may all lead to the appearance of an extensor response in the absence of any organic lesion of the pyramidal tract. Scopolamin will convert a flexor response into an extensor type in cases in which the pyramidal tract system is affected only slightly, and the drug may therefore be used to unmask a latent or equivocal extensor reflex.

Intussusception.—The varieties of intussusception present in the twenty cases analyzed by Gray were ileo-ileocecal, ten; ileocecal (so-called ileocolic), seven; ileac (enteric), two; ileac ileocecal, one. The true ileocolic type did not occur. Only two patients died. The ileocecal variety of intussusception was present, and the duration was four and seven days, respectively, longer than in any other case. Gray urges gentle and speedy reduction; gas and oxygen anesthetic for operation; and subcutaneous infusion of glucose, 2 per cent., in physiologic sodium chlorid solution, immediately after operation.

Recompression of Tuberculous Lung by Artificial Pneumothorax.—The particular points of interest in the case cited by Hutchinson were: (1) the interval between the last refill and the second induction was six years and three months; (2) the entire absence of adhesions, in spite of a history of pleurisy and the presence of a pleuritic rub in September, 1915. This is a minor point of interest, confirming clinical experience that sufficient pleural space for a successful pneumothorax is sometimes found even when there has been a history of previous pleurisy. In other words, the opinion is confirmed that the possibility of inducing artificial pneumothorax is best estimated by attempting to carry it out, despite the deterrent influence of the medical history.

Tropical Sprue and Pernicious Anemia Related.—It is Elders' belief that there is a close relation between pernicious anemia and tropical sprue. Certain well recognized features in pernicious anemia cannot be explained satisfactorily by an intoxication hypothesis, while the same facts, and all the others, are easily explicable on a deficiency hypothesis. There is only a slight difference between the two diseases, and if one is a deficiency disease, the other should be so too. During nearly ten years, Elders has not lost a single case of tropical sprue, and even the severest cases were cured or greatly improved by a proper diet, consisting of underdone meat up to 1 kg. or more, with from 1.5 to 2 liters of raw milk with lime water given five times a day, 15 c.c. at a time, 15 or 30 c.c. of cod liver oil, and a few oranges, or 400 gm. of strawberries, a day. Patients with pernicious anemia also greatly improved on this diet. All this seems to point to the conclusion that sprue and pernicious anemia are closely related, and that sprue is a curable deficiency disease. According to Elders, there are only the following real differences between the two diseases: Though there are gastro-intestinal disorders in both, these may be absent in pernicious anemia and are more serious in tropical sprue. In tropical sprue there is more fermentation in the intestinal canal, and commonly there are produced acids and gas. The reaction of the motions to litmus is acid. In association with this, there is a higher degree of emaciation in tropical sprue. Fat is not properly digested in sprue. To explain these differences, it may be said that the deficiency in the food, which is the cause of the diseases, is for the greater part common to the two and in a small part different. It seems possible that lack in fat soluble A and perhaps water soluble B plays a more important part in sprue than in pernicious anemia.

South African Medical Record, Cape Town

23: 559-578 (Dec. 27) 1924

Relation of Psychiatrist to Delinquency. J. T. Dunston.—p. 560.
Infant Feeding. G. K. Cross.—p. 564.
Case of Irreducible Prolapse of Rectum and Pelvic Colon in Adult. J. J. Levin.—p. 568.

Annales des Maladies Vénériennes, Paris

20: 1-80 (Jan.) 1925

Present Status of Our Knowledge of Syphilis. V. Zaroubine.—p. 1.
Supposed Healthy Carriers of the Gonococcus. C. David.—p. 20.
*Acute Bismuth Poisoning. X. Vilanova.—p. 25.

Acute Bismuth Poisoning.—Vilanova describes a case of idiosyncrasy to bismuth in a syphilitic woman, under mixed neo-arsphenamin and bismuth treatment. The small total of 0.237 gm. of metallic bismuth in eighteen days induced phenomena of severe poisoning, characterized by grave lesions in the intestines, tubular nephritis, fever and stomatitis, similar to that from mercury. The nervous system was apparently not affected. The toxic symptoms persisted for a month; there had been no warning line on the gums.

Bruxelles Médical, Brussels

5: 407-444 (Jan. 18) 1925

Abdominal Orthopedics. Bourcart.—p. 407.
Primary Hypertrophy of the Heart. Lian and Blondel.—p. 410.
*Congenital Edema. Goormaghtigh and van Cauwenberghe.—p. 412.

Congenital Generalised Edema in the New-Born.—Necropsy showed changes in the blood-producing and other organs analogous to those of leukemia, except that the excessive production was of erythrocytes. Goormaghtigh and Cauwenberghe ascribe the anomaly to tuberculosis in the parents.

Bulletin de l'Académie de Médecine, Paris

93: 85-104 (Jan. 20) 1925

Fracture with Shortening of Leg. A. Broca.—p. 92.
Formaldehyd in Skin Cancer. O. Laurent.—p. 95.
Hygiene in Regard to Oyster Beds. J. Kunstler.—p. 98.
*Biliary Colic in Relation to Pregnancy. G. Parturier.—p. 99.

Biliary Colic, Pregnancy and Immunity.—Parturier noted that women with a history of biliary colics escaped them during their pregnancy (88.5 per cent. of twenty-six women), although pregnancy seems to predispose to cholecystitis and particularly to cholelithiasis. The colics appear in women most frequently soon after childbirth. These facts may be explained by the assumption that pregnancy induces immunity against certain anaphylactic shocks, and that the liver colic is analogous to a protein shock when the ovary resumes its external functions.

Bulletins de la Société Médicale des Hôpitaux, Paris

49: 39-76 (Jan. 16) 1925

Case of Syphilitic Peridoodenitis. Babonneix and Maurice-Lévy.—p. 39.
*Hemorrhages in Liver Disease. Fiessinger and Diaconescu.—p. 42.
*Iodized Oil Injection in Epidural Infection. Sicard and Paraf.—p. 50.
Antithyroid Serum in Hyperthyroidism. E. Coulaud and Suau.—p. 52.
Psychopathic Ward in the "Hôtel-Dieu." Lévy-Valensi et al.—p. 58.
Sodium Salicylate in Epidemic Encephalitis. R. Benard et al.—p. 61.
Pleurisy Requires Prolonged Supervision. Brelet.—p. 67.
Sore Throat with Monocytosis. J. Hatzieganu and I. Goia.—p. 69.
Lesions in Chronic Gastritis. F. Ramond and C. Jacquelin.—p. 71.
Sudden Death from Coronary Sclerosis. Renaud and Roland.—p. 75.

Origin of Hemorrhages in Liver Deficiency.—Fiessinger and Diaconescu are convinced that the hemorrhages in liver disease are not caused by defective coagulation of the blood, but by a lowered resistance of the walls of the small vessels. They assume that changes in the perithelium from deficient functioning of the liver are the factors in dilatation and rupture of the capillaries. This localized or diffuse miopragia explains the phenomena observed.

Iodized Oil Injections in Epidural Infection.—Sicard and Paraf emphasize that by means of a subarachnoid injection of iodized oil they were able to localize a staphylococcus infection in the epidural space, and to obtain evidence that the dura was not affected, and that there were no signs of spondylitis. Laminectomy, extending from the fifth lumbar to the tenth dorsal vertebra, allowed evacuation of a series of small abscesses and recovery, without impairing the strength or flexibility of the spine.

Comptes Rendus de la Société de Biologie, Paris

92: 49-120 (Jan. 23) 1925. Partial Index

Vascular Supply of the Optic Radiation. Foix and Hillemand.—p. 52.
*Spirochetes in Tuberculous Sputum. F. Bezançon and Etchegoin.—p. 55.
*No Anaphylaxis from Vaccines. L. Goldenberg and L. Panisset.—p. 57.
*Sensitivity of Micro-Organisms to Radium. Lacassagne and Paulin.—p. 61.
Basal Metabolism in Water and in Air. Bernard and Mayer.—p. 62.
*Origin of Secretion Granules. M. Parat and J. Painlevé.—p. 65.
*Direct Injury from Roentgen Rays. J. Jolly and R. Ferroux.—p. 67.
*Cholesterol in Colostrum. H. Dorlencourt and E. Palfy.—p. 70.
Classification of Jaundice by Diazo. Fiessinger and Castéran.—p. 71.
*Hydrogen Ions in Heated Milk. N. L. Cosmovici.—p. 73.
*Trauma as Affecting Metamorphosis. H. Singh Pruthi.—p. 76.
*Bacteriolytic Bacilli. L. Rosenthal.—p. 78.
*Action of Nicotin and Epinephrin on Panting. M. Ozorio de Almeida.—p. 79.
The Spiral Index of Spirochetes. G. Delamare and Achitouv.—p. 81.
*Silver Stain for Finest Fibers. M. Caudière.—p. 83.
*Typhoid Cholecystitis. S. Costa and L. Boyer.—p. 92.
*Intradermal Test for Susceptibility to Typhoid. Costa et al.—p. 93.
*Typhoid and Paratyphoid Thyroiditis. Sabrazès et al.—p. 101.
Hemoglobin in the Spectrum. E. Doumer and L. Fourrier.—p. 105.
Transformation Outside of the Organism of Mononuclears into Fibroblasts. A. Fischer.—p. 109.
Blood Grouping of Cancer Subjects. E. W. Johannsen.—p. 112.
Multirotation of Beta Glucose. Lundsgaard and Holboell.—p. 115.
Interchanges of Carbohydrates. Lundsgaard and Holboell.—p. 116.
"Nonspecific Immunity." I. Balteanu and G. Tudoranu.—p. 119.

Spirochete in Sputum During Hemoptysis.—Bezançon and Etchegoin describe a species of spirochete which they found in the sputum of tuberculous patients only during hemoptysis. The spirochetes were present in twenty-six instances out of twenty-seven. In the one instance in which the spirochetes were absent, tubercle bacilli had not been detected either, although the clinical picture indicated tuberculosis. They consider the spirochete as an intermediary type between *Spirochaeta buccalis* and Castellani's *Spirochaeta bronchialis*.

No Anaphylaxis from Repeated Injections of Bacterial Vaccine.—Experiments on thirty-four guinea-pigs and rabbits proved to Goldenberg and Panisset that repeated injections of a bacterial vaccine, at intervals in which anaphylaxis usually occurs, did not induce an immediate or tardy disturbance, revealing hypersensitiveness. Also vaccine associated with serum did not produce anaphylaxis in repeated injections.

Sensitiveness of Microbes to Beta Rays.—Lacassagne and Paulin state that the bactericidal action of rays varies according to the sensitiveness of the microbes to the rays. The difference does not depend on the size, development, toxic and chromogenic properties, or spore formation of the bacteria. The action of the rays also does not seem to be influenced by the nature of the culture medium.

Mitochondria and Formation of Secretory Granules.—Observation on secretory granules in the cells of the parotid, pancreas and eosinophil leukocytes of vertebrates and also certain invertebrates, convinced Parat and Painlevé that the granules do not originate directly from mitochondria. The mitochondria may be as indispensable as the nuclei, but their function is still unknown.

Direct and Indirect Action of Roentgen Rays.—Jolly and Ferroux affirm, referring to experiments on rabbits, that the slight lesions produced in glands, while protected, are due to a direct action of diffuse and secondary roentgen rays. An indirect or toxic action, if any exists, has no importance.

Cholesterol in Human Colostrum.—Dorlencourt and Palfy's research showed that cholesterol is a normal and constant element in colostrum, its rate varying from 0.22 gm. to 0.50 gm. per thousand cubic centimeters. The amount decreases notably after suckling, the reverse of what occurs in milk. Colostrum, poor in fats, contains about twice as much cholesterol as milk, rich in fats.

Changes of p_H in Milk During Heating.—Cosmovici noted that the p_H declines progressively in milk as the warming temperature rises. Evidently the heat modifies the balance of colloids in the milk.

Influence of Injury on Metamorphosis in Insects.—Pruthi says that trauma may accelerate the metamorphosis of insects. An early occurrence of the third stage of development is manifest in gravely injured caterpillars. The phenomenon is analogous to the self-defense of certain living beings which become encysted to protect themselves against an injury.

Bacteriolytic Microbes.—Rosenthal noted that microbes of the tyrothrix group dissolve living cultures of other bacteria, as well as cultures killed by heat. The typhoid bacillus, colon bacillus, proteus, staphylococcus and diplococcus were dissolved by the tyrothrix. He suggests to call

microbes possessing this property bacteriolytic microbes or lysobacteria.

Action of Nicotin and Epinephrin on Polypnea.—Ozorio de Almeida states that while epinephrin accelerates the rhythm in polypnea, nicotin induces apnea, when injected in animals panting from the heat.

Technic for Staining Connective Fibrils.—Caudière succeeded in detecting the most minute connective fibrils in tumors, inducing saturation with silver solution. He describes the technic which he believes to be superior to the classic methods.

Ascites and Cholecystitis from Typhoid Fever.—Costa and Boyer report a case of ascites in an acute cholecystitis, without perforation. The cholecystitis occurred during the second week of typhoid in a girl, aged over 6 years. While typhoid bacilli were found in the bile and in the abdominal fluid it is uncertain if the peritoneal infection came from the gallbladder, or was an independent localization.

Local Reaction in Typhoid Fever.—Costa, Boyer and Giraud injected intradermally from 0.1 to 0.3 c.c. of pure, or of a 5 or 10 per cent. suspension of a bouillon culture of typhoid bacilli. Negative reactions were noted in the course of typhoid fever. The reaction became positive in defervescence, and still more pronounced in convalescence. A positive reaction was manifest also in other diseases, and in healthy subjects. Only once a negative reaction appeared in hemiplegia, and a positive in typhoid fever. Future research will determine the value of this intradermal reaction.

Vaccine Treatment in Thyroiditis from Typhoid.—Sabrazès, Sainte Marie and Alain treated with antityphoid vaccine a case of intense thyroiditis with diseased adjacent glands in the course of typhoid fever. After two doses of 0.5 c.c. of the antityphoid vaccine, at four days' interval, the thyroid and other glands subsided to normal size, and the patient rapidly recovered. In the sixteen cases of typhoid thyroiditis collected, 50 per cent. had a preexisting goiter. Operative measures were required in thirteen cases. The rapid recovery in their personal case justifies, they think, vaccine therapy as a routine measure.

Journal de Radiologie et d'Electrologie, Paris

8: 529-576 (Dec.) 1924

Radium Holder for Cancer of Esophagus. A. Jentzer.—p. 529.
*Cure of Osteosarcoma under Radiotherapy. H. Wachtel.—p. 543.
Intestinal Insufflator for Radioscopy. Charnaux.—p. 547.

Transformation of Osteosarcoma into Osteoma Under Roentgen-Ray Treatment.—Wachtel treated with deep roentgen rays a case of giant-cell sarcoma, localized on the right iliac crest, with softening of the whole ilium, in a young woman. A dose of 2 skin units; current 1.5 ma.; 2 mm. aluminum filter; focal distance 24 cm., had been used for each exposure. After five irradiations, each twenty-five minutes, applied daily to the anterior surface of the tumor, the size of the tumor decreased by 7 cm. The same dose, repeated in the next five days, and applied to the posterior part of the pelvis, was followed by a notable improvement in the general condition. After a ten days' interval the right abdominal region was exposed again, also 10 skin units were added for the hypertrophied glands near the left iliac crest. Two months later the irradiation of the glands was repeated. The change of the osteosarcoma into nonmalignant osteoma, which became evident in the radiograms in four months, has gradually progressed since to a complete transformation, and recovery of the patient. She has gained over 25 pounds in ten months.

Journal d'Urologie Médicale et Chirurgicale, Paris

18: 449-540 (Dec.) 1924

Necrosis of the Kidney. E. Falci.—p. 449.
*Diathermy in Gonococcal Vesiculitis. E. Roucayrol.—p. 466.
Foreign Bodies in Bladder. G. Marinesco.—p. 470.
Fibroadenoma of Bladder. Uteau.—p. 472.
Prolapse of Ureteral Mucosa. Uteau.—p. 473.
Modified Philip's Catheter. J. de Smeth.—p. 474.

Diathermy in Gonococcal Vesiculitis.—Roucayrol reports successful treatment with diathermy in fourteen cases of gonorrheal vesiculitis. In four instances diathermy was the only means of treatment, while in ten it had been employed after other methods had failed. From four to fifteen exposures were used.

Paris Médical

55: 97-112 (Jan. 31) 1925

*Encephalitis and Herpes. C. Levaditi.—p. 97.
Reactivation of Wassermann Reaction. R. Krefting.—p. 104. Idem. G. Milian.—p. 105. Idem. Riser.—p. 106.
*Congenital Absence of Ulna. M. Klippel et al.—p. 107.
Peritonitis After Appendectomy. G. E. Vaquié.—p. 109.
*Pathogenesis of Migraine. D. Paulian.—p. 110.

Connection of Epidemic Encephalitis with Herpes.—Levaditi points out that the specific filtrable virus causing different syndromes of herpes remains in the saliva and nasopharynx of most subjects without producing any disturbances. But certain conditions may enhance its virulence, and if the virus passes then through an inflamed nasopharyngeal mucosa, it invades the central nervous system. The epitheliotropic virus becomes a neurotropic. He concludes that the saliva virus, the virus of herpes, and the encephalitis virus are variants of the same ultravirus.

Congenital Absence of Ulna.—Klippel, Dainville and Feil report a case of congenital absence of the left ulna in a boy, aged 9 months. Only the thumb and the little finger, with the corresponding metacarpal bones, were present. The absence of the bone was total, while in the recorded seventy-one cases only a part, mostly the lower extremity of the ulna, was missing.

Pathogenesis of Migraine.—Paulian says that migraine is a symptom of a lesion at the base of the brain, which was confirmed in his five cases by roentgenography. Osteoperiosteal tumors around the sella turcica, where the oculomotor nerves pass, malformations of the sella turcica, connected with a deficient functioning of the pituitary, or purulent otitis, latent bacillary lesions, or congenital syphilis may be the causal factor in migraine.

Presse Médicale, Paris

33: 113-128 (Jan. 28) 1925

Syndromes of the Thalamus Region. C. Foix and P. Hillemand.—p. 113.
Relations Between Ovarian Secretion and Sympathetic Tonus. A. Crainiciunu.—p. 117.
Mechanism of Anaphylaxis. H. Plotz.—p. 119.

33: 129-144 (Jan. 31) 1925

*Renal and Biliary Lithiasis. A. Chauffard and M. Debray.—p. 129.
*Treatment in Neurosyphilis. G. Marinesco and S. Draganesco.—p. 130.
*Is Tobacco Smoke a Poison? L. Binet.—p. 134.

Connection Between Renal and Biliary Lithiasis.—Chauffard and Debray's observation in twenty-one cases showed that hyperuricemia, accompanied frequently by an excess of cholesterol in the blood, favors the formation of gallstones. If cholelithiasis is the primary affection, hyperuricemia does not occur, and consequently there is no predisposition to kidney calculi or gout. The first attack of kidney colic from calculi had preceded any gallstone colic attack in eleven of their twelve cases of this double lithiasis. Gout seems to be also the primary disease in instances with a coinciding cholelithiasis.

Intraspinal Treatment in Neurosyphilis.—On the basis of Hoff's experiments on animals with arsenic, and their own with trypan blue, Marinesco and Draganesco affirm that drugs administered intravenously do not reach the central nervous system. Only repeated intravenous injections, combined with subarachnoid injections, have a chance for success in treatment of neurosyphilitic affections. They used Gennerich's method in eighty-five patients with neurosyphilis. They drew from 50 to 120 c.c. of the cerebrospinal fluid, mixed with two thirds of the amount 1-1.8 mg. of neo-arsphenamin, and reinjected it. An intravenous injection of neo-arsphenamin followed the next day. Eleven patients out of seventeen with general paralysis improved; two presented a short remission after a grave recurrence; in four the treatment did not display any effect. In one of two with tabes and paralysis, an amelioration of clinical phenomena and changes in the reactions were manifest. Improvement in the ataxia and

relief from pains were noted in five tabetics after four or five injections; also improvement of recent visual disturbances in one tabetic. Administration of 6-22 mg. of neoarsphenamin, in four to seven subarachnoid injections, induced an improvement in seven cases of cerebral syphilis, submitted besides to a general treatment. It is emphasized that the results were superior to those from general treatment, and even from arsphenaminized serum in vivo.

Is Tobacco Smoke a Poison for the Brain?—Binet cites research on rabbits which showed cellular lesions in the cortex of different convolutions from chronic intoxication with tobacco smoke; also experiments which proved a disturbed memory in white mice from an acute poisoning with tobacco smoke. He says that the *mémoire d'évocation* seemed to be affected more than the *mémoire de fixation* in the mice tested.

Revue Française d'Endocrinologie, Paris

2: 301-380 (Oct.) 1924

*Emotive Action of Epinephrin. G. Marañon.—p. 301.
Spontaneous Senile Myxedema. S. Bonnamour.—p. 326.
Three Cases of Endocrine Fever. G. Richard.—p. 335.
Intraspinal Injection of Insulin. C. Popescu-Inotesti.—p. 346.

Emotive Action of Epinephrin.—Marañon states that the effect was manifested either by a calm subjective perception of certain somatic disturbances, or by a complete involuntary emotion. In the first, the subject's remarks: "I feel as if I were frightened," or, "as if I were going to weep without knowing why," etc., show the distinction between the perception of the peripheral phenomena of vegetative emotion and psychic emotion properly so called. In many cases sad reminders, met unemotionally before the injection, after the injection caused emotional manifestations. Habitual emotional instability, often related to hyperthyroidism, constituted an important predisposing condition for the emotive action. The negative reaction could be made positive by preliminary treatment with thyroid in sufficient quantity. The reaction was often positive in transient psychopathic states, and frequently in the menopause. The duration was always brief, generally not over two or three minutes. No other drug used by pharmacologists or physiologists has this emotion-inducing effect.

Revue Franç. de Gynécologie et d'Obstét., Paris

20: 1-96 (Jan. 25) 1925

Pseudophlegmon in Broad Ligament. Villard and Creyssel.—p. 1.
*Pathogenesis of Uterine Hemorrhage. G. Cotte and Vachey.—p. 18.
*Operative Treatment of Dysmenorrhea. H. Violet.—p. 23.
Technic for Shortening Round Ligaments. C. Pellanda.—p. 40.
Indications for Gynecologic Kinesitherapy. H. Quincieu.—p. 50.
Cystic Degeneration of Relics of Ovaries. P. Gillet.—p. 74.
*Exploration of the Uterus with the Finger. F. Mazet.—p. 82.

Nervous Origin of Uterine Hemorrhages.—Referring to the importance of the nervous elements in the ovaries, Cotte and Vachey conclude that uterine hemorrhage may be caused by a vasodilating reflex from the diseased ovary, as well as by the lipoid secretion.

Operative Treatment of Dysmenorrhea.—Violet describes his method for stretching the uterine nerves, at the base of the broad ligament, as applied in four cases of grave dysmenorrhea. Unilateral lesions from chronic parametritis had caused irritation of the uterine nerves. Separation of the adherent tissues, severing the sclerosed fibers, and stretching the nerves, after an incision in the posterior layer of the inflamed ligament, gave excellent results. The cure has persisted in one instance for ten years, and in three recent cases from five to six months.

Intra-Uterine Digital Examination.—Mazet emphasizes the value of exploration with the finger in diagnosis of certain intra-uterine affections. The dilatation of the os, for passage of the index finger to the fundus, is made first with laminaria, and completed with Hegar's dilators, under ether anesthesia, progressing from No. 8 or 10 to 19 or 20. He remarks that this digital exploration may "save a patient from hysterectomy or may save her by hysterectomy." It may reveal a malignant tumor in cases diagnosed as hemorrhagic endometritis. Pregnancy or adnexitis are contraindications.

Schweizerische medizinische Wochenschrift, Basel

55: 45-64 (Jan. 15) 1925

*Action of Thyroid and Cleavage Products. Abelin and Sato.—p. 45.
*The Heart in Exophthalmic Goiter. A. Oswald.—p. 50.
*Distribution and Circulation of Iodin. T. von Fellenberg.—p. 53.
Zuppinger's Apparatus for Fractures. J. B. Rocco.—p. 56.

Action of Thyroid and Organ Cleavage Products.—Abelin and Sato studied the changes in the blood following administration of thyroid to rabbits and sheep. The blood viscosity showed periodic oscillations. Certain changes of sedimentation speed were also found. The differential count was stable in rabbits, and a relative lymphocytosis was noted in the sheep. They believe that these findings and the increased elimination of nitrogen make the resemblance striking between the action of the thyroid and of parenteral injections of proteins. Part of the results of thyroid tissue feeding may be due to the action of cleavage products of organs.

The Heart in Exophthalmic Goiter.—Oswald reviews the pathology of the heart in exophthalmic goiter. The main cause of the cardiac disturbances is the increased irritability of the vegetative nervous system.

Distribution and Circulation of Iodin.—Fellenberg publishes figures on the distribution of iodin in nature.

Archivio Italiano di Chirurgia, Bologna

10: 587-820, 1924

Case of Myxtoma of the Foot in Sardinia. F. Putzu.—p. 587.
Study of 100 Cases of Fracture of Neck of Femur. S. Lussana.—p. 629.
Dislocation of Clavicle Above the Acromion. S. Marconi.—p. 805.

Chirurgia degli Organi di Movimento, Bologna

9: 1-212 (Dec.) 1924

*Grafts of Embryonal Tissues. G. Faldino.—p. 1.
*Grafts of Nerve Roots. G. Crescenzi.—p. 28.
*Astragalectomy for Paralysis. F. Satta.—p. 37.
Flexor Muscles from Standpoint of Prosthesis. L. Tonnini.—p. 49.
Primary Sarcoma of Subtrochanter Bursa. G. Razzaboni.—p. 87.
Segmental Osteotomy for Rachitic Curvature. G. Pieri.—p. 97.
*Tardy Traumatic Spondylitis. G. Zamboni.—p. 105.
Habitual Dislocation of Shoulder. G. Valtancoli.—p. 131.
Treatment of Spiroid Fractures. S. Grisanti.—p. 141.
Alternating Scoliosis from Sciatica. G. Calissano.—p. 158.
Posterior Dislocation of Shoulder. G. Valtancoli.—p. 171.
Multiple Osteotomy for Rachitic Curvature. R. Sacco.—p. 189.
The Meeting of the British Orthopedic Association at the Rizzoli Institute.—p. 211.

Grafts of Embryonal Tissue.—Continuing his research in this line, Faldino now announces that grafts of homoplastic embryonal tissue, implanted in the anterior chamber of rabbits and dogs, develop apparently according to their natural laws of growth. Not only vessels but nerves may penetrate them from the host's tissues. This does not occur with heteroplastic grafts.

Transplantation of Nerve Roots.—Crescenzi successfully transplanted a nerve root from one side to the other, or to a higher or lower level, in ten dogs. The recuperation of function occurred in some as early as sixty or seventy days. With unilateral anastomosis, new fibers may develop, traveling either centripetally or centrifugally.

Astragalectomy.—Satta declares that this operation has no rational basis in treatment of a paralyzed foot. In a case described, a worse deformity resulted.

Tardy Traumatic Spondylitis.—Zamboni's two cases confirm his impression from the literature that callus formation is defective in these cases, and the callus fractures under some unusual stress. An Albee implant proved a great success in one young woman.

Pediatria, Naples

33: 57-112 (Jan. 15) 1925

*Etiology of German Measles. M. B. Sindoni and P. Ritossa.—p. 57.
*The Sachs-Georgi Test in Milk. G. Castorina.—p. 65.
Prognosis of Spasmophilia. R. Dardani.—p. 70.
*The Blood and Bone Marrow in Premature Infants. R. Pollitzer.—p. 83.
Autoserotherapy by Blister Fluid. P. Iacchia.—p. 89.
Vitamins and Avitaminoses. C. Gallo.—p. 95.

Etiology of German Measles.—Sindoni and Ritossa cultivated from the blood of patients with German measles gram-positive filtrable cocci and diplococci. The germs grew in small amounts exclusively anaerobically on catalyzing medi-

ums. They are not pathogenic for rabbits. Intramuscular injection of the tenth generation in man produced symptoms resembling—in their opinion—German measles.

The Sachs-Georgi Test in Milk.—Castorina adds to human milk a little kaolin and leaves it for twenty-four hours in the icebox. Subsequent centrifugation gives a clear fluid. The Sachs-Georgi test was less frequently positive than the Wassermann test. His material consisted of milk from fifteen syphilitic and seventeen nonsyphilitic women.

The Blood and Bone Marrow in Prematures.—Pollitzer finds in the bone marrow of prematurely born infants a prevalence of immature red cells, and frequently an eosinophilia.

Policlinico, Rome

29: 41-80 (Jan. 12) 1925

Osteomyelitis. D. Taddei.—p. 41.
*Irradiation Treatment of Spasmophilia. U. Ferri.—p. 45.
*Morbidity and Atmospheric Conditions. B. Alosi.—p. 48.

Irradiation Treatment of Spasmophilia.—Ferri treated spasmophilic children with ultraviolet rays. The return of calcium to normal conditions is only temporary. Nevertheless, the clinical symptoms disappear.

Morbidity and Atmospheric Conditions.—Alosi finds no relation between morbidity and mortality. The latter increases during winter, the former during the summer. The changes of the morbidity are the reverse. Morbidity increases on days with augmentation of humidity of the air. The mortality changes parallel the atmospheric pressure. Winds have an indirect influence by changing the pressure and humidity of the air.

29: 81-112 (Jan. 19) 1925

*Spirochetosis Icterohemorrhagica. V. Vanni.—p. 81.
Phrenicotomy and Thoracoplasty. L. Losio.—p. 83.
*Foci of Amebiasis in Romagna Region. E. Mondolfo.—p. 85.
Present Status of Preventive Vaccination Against Tuberculosis. E. Maragliano.—p. 87.

Spirochetosis Icterohemorrhagica.—Vanni injects 5 c.c. of the urine intraperitoneally in a guinea-pig, and examines its blood after forty-eight hours for the presence of spirochetes. He recommends the method for every patient suspicious of Weil's disease. Some of them have no hemorrhages; others have a purpura without jaundice.

Foci of Amebiasis in Romagna.—Mondolfo observed several cases of amebic dysentery near Rome.

Riforma Medica, Naples

41: 25-48 (Jan. 12) 1925

Paratyphoid B. S. Trentini.—p. 25.
Cisterna Puncture and Myelography. G. Cocchiararo and R. Rordorf.—p. 29.
*Malaria Spleen and Appendicitis. O. Cignozzi.—p. 32.
Arthritism. A. Ferrannini.—p. 35.
Infections of the Hand. E. Aievoli.—p. 36.

Malaria Spleen and Appendicitis.—Cignozzi believes that marked splenomegaly is a contributing cause of appendicitis. The megacecum usually found in these cases should be treated surgically also.

41: 49-72 (Jan. 19) 1925

Therapeutic Pneumothorax. A. de Martini.—p. 49.
*The Cicatrix After Cesarean Section. R. Calvanico.—p. 53.
*Intradermal Protein Therapy. C. Couvert.—p. 55.
*Malta Fever and Bang's Bacillus Abortus. G. Ficai and A. Alessandrini.—p. 57.
Echinococcus in Spigelian Lobe. A. Ferrannini.—p. 58.

The Cicatrix After Cesarean Section.—Calvanico examined cicatricial tissue from a previous cesarean section. The reduction of the muscular layer of the uterus shows the danger of rupture—especially in cases which had been complicated by suppuration, like the one he examined.

Intradermal Protein Therapy.—Couvert injected milk and other proteins intradermally in various diseases. He confirms the good results in epididymitis. The effect was inconstant in eczema. Pyodermic affections gave fine results.

Malta Fever and Bang's Bacillus Abortus.—Ficai and Alessandrini present evidence that certain cases diagnosed as Malta fever are in reality due to *Bacillus abortus* (Bang), which is consequently pathogenic for man. The specific agglutinins are stable at 65 C., while the melitensis agglutinins are destroyed at this temperature.

Prensa Médica, Buenos Aires

11: 733-768 (Jan. 10) 1925

*Cauda Equina Syndrome. M. R. Castex and A. F. Camauer.—p. 733.
*Glucose to Protect Against Chloroform. O. F. Mazzini.—p. 749.
Adsorption of Hemolysins by Charcoal. Roffo and Barbará.—p. 760.

Cauda Equina Syndrome of Tuberculous Origin.—The symptoms were first noted at the age of 9, the legs feeling heavy and painful on walking, but recuperating when they were alternately raised, so that the walk could be continued. This episode lasted for three months, after which the gait became normal until the age of 16 when the symptoms returned, with pains in the sacral region. The presumptive diagnosis is a tuberculous process in the third lumbar vertebra, involving the cauda equina. Simple compression of the latter seemed to be excluded by the character of the dissociation between the motor and sensory disturbances. The tactile sense was normal, while the heat and pain sense was abolished on both sides. The case lacks confirmation as necropsy was not allowed.

Protecting Influence of Glycogen in Chloroform Anesthesia.—Mazzini reports extensive research which demonstrated that chloroform exerted a severity of toxic action on fasting animals in inverse proportion to the glycogen content of the liver. Administration of glucose to fasting animals before the anesthesia reduced the toxic action from the chloroform, but no effect was apparent when the glucose was not administered until after the chloroform had been given. He reiterates that persons who have been fasting must not be given chloroform until after they have had hypertonic solutions of glucose injected, with plenty of water to drink.

Revista de Ciencias Médicas, Mexico City

3: 223-257 (Dec.) 1924

*Lamblia Dysentery. M. Ramos Contreras.—p. 223.
*Cerebrospinal Meningitis. D. Mayoral Pardo.—p. 228.
Vulvovaginitis in Little Girls. Eliseo Ramirez.—p. 243.

Lambliasis.—Contreras states that no benefit was derived from emetin and other measures in the case described, but the lamblia was exterminated with a course of thymol treatment. The child, aged 8, had presented symptoms suggesting dysentery since the age of 8 months.

Cerebrospinal Meningitis.—In the epidemic of ten cases reported by Mayoral Pardo, the meningococcus was found in seven and the pneumococcus in others, all from the same barracks. None recovered among the meningococcus cases.

Revista Médica Latino-Americana, Buenos Aires

10: 205-306, 1924

*Leukocyte Count in Pancreatic Diabetes. Soler and Campbell.—p. 205.
Cystic Disease of the Jaws. C. Lugones.—p. 212.
The Doses in Radium Treatment. E. J. Jonquiéres.—p. 223.
Curie Therapy of Cancer of the Uterus. N. Capizzano.—p. 236.
Present Status of Azotemia and Uremia. I. Lucio Ymaz.—p. 244.
Present Status of Eczema. Amaury Pasqualis Politi.—p. 255.
Aneurysm of the Carotid. A. R. Rossi and J. F. Márquez.—p. 270.

Leukocyte Count in Diabetes.—Soler and Campbell state that the leukocytes formed 94 per cent. and the lymphocytes 6 per cent. in a young man with lean (autophagic) diabetes. The figures were identical with those in a pancreatectomized dog thirteen days after the operation.

Siglo Médico, Madrid

74: 569-596 (Dec. 13) 1924

Dyspareunia and Sexual Frigidity in Women. Vital Aza.—p. 569.
*Cervical Sympathectomy for Angina Pectoris. José Arce.—p. 573.
Atypical Forms of Malaria. C. W. Huysuen and R. Buendia.—p. 577.
The "Acute Abdomen." Slocker de la Rosa.—p. 578. Cont'n.

Cervical Sympathectomy in Treatment of Angina Pectoris.—Arce reports three cases, the interval since the operation only four months at longest. The men, aged 44 to 76, had been suffering for several months to two or five years with recurring attacks of pain of the angina pectoris type. One had been contemplating suicide. Severing the sympathetic according to Jonnesco's method arrested the pain at once and it has not recurred. The operation is simple, he says, but it acts only on the pain; it does not modify organic lesions.

Deutsche medizinische Wochenschrift, Berlin

51: 91-132 (Jan. 16) 1925

Pathologic Anatomy of Nephritis. H. Beitzke.—p. 91.
*After-Treatment of Brain Abscess. O. Körner.—p. 95.
*Experiments on Herpes. E. Gildemeister and K. Herzberg.—p. 97.
*Intravenous Injection. H. Handovsky.—p. 98.
*Symptomatology of Encephalitis. E. Trömner.—p. 99.
Blood Diseases. W. Steinbrinck.—p. 106.
*Coitus, Menses and Sex of Child. E. Blumenfeld.—p. 108.
Treatment of Chronic Fistulas. A. Simons.—p. 109.
*Prediction of Sex. R. Fetscher.—p. 110.
Surgery in Children. W. Kausch.—p. 110. Cont'd.
*Dangers of Alcohol Dressings. P. Klein.—p. 111.
*Hair Fashions and Eczema of the Ear. E. Doctor.—p. 112.
Forceps for Seizing Portio Through Speculum. Kluge.—p. 113.
Substitutes for Proprietaries. F. Müller.—p. 113.
Progress in Orthopedics. H. Debrunner.—p. 113.
*Epidemiology of Smallpox. O. Cherefeddin.—p. 114.
Medicine in the French Colonies. C. Schilling.—p. 115.
*Some Medicolegal Questions. Ebermayer.—p. 115. Cont'n.
*Medicine in the Netherlands East Indies. D. Engel.—p. 116.
The Tonsil Question in Recent Years. L. Joseph.—p. 129.

After-Treatment of Brain Abscess.—Körner takes necrotic particles from the abscess cavity with forceps, and irrigates the cavity, without using pressure, with diluted hydrogen peroxid. Introduction of a finger is dangerous. Gauze is an absolutely unsuitable drain in cerebral and cerebellar abscesses. He uses stiff tubes and has treated with this method six patients in the last three and a half years. One with encephalitis and meningitis died three hours after the operation. The other five recovered.

Experiments on Herpes.—Gildemeister and Herzberg produced characteristic pustules in the heel of guinea-pigs by inoculation with the contents of vesicles from febrile herpes. Later passages of an originally weak virus may produce encephalitis in rabbits.

Intravenous Injection.—Handovsky's independent investigations confirm Hanzlik's observations on the colloidoclastic action of intravenous infusions. He reports on Trossel's experiments with injections of small amounts of distilled water in rabbits. The blood pressure increased and the epinephrin response decreased.

Symptomatology of Encephalitis.—Trömner observed a scarlatiniform eruption and scales in a case of epidemic encephalitis. Myxedematous changes of the hands, xanthochromia of the cerebrospinal fluid, hemiatrophy of the tongue and hemiepilepsy were other rare symptoms noted in his patients. Syphilis or arsphenamin may be predisposing causes.

Term of Coitus and Sex of Child.—Blumenfeld confirms only in part Siegel's observations. In his material of seventy-five cases, the coitus just before the menstrual period resulted in a larger percentage of boys.

Prediction of Sex.—Fetscher shows that the percentage of correct predictions of the sex with Schöner's hypothesis of "alternation of sex" is lower than it would be with simple guessing. This is due partly to the small number of his cases, partly to his attempt to introduce a second law (alternation of ovaries).

Dangers of Alcohol Dressings.—Klein reports a case of fatal poisoning of a 2 year old boy. He had second degree burns, which were treated by a nurse by application of denatured alcohol. The child became somnolent after two hours, the odor of alcohol was strong in his breath, and he died the tenth hour.

Hair Fashions and Eczema of the Ear.—Doctor incriminates the wearing the hair over the ears for the localization of eczema behind the ears. The perspiration cannot evaporate, and it macerates the skin.

Epidemiology of Smallpox.—Cherefeddin's chart shows a four or five year periodicity of the small epidemics of smallpox in Constantinople. The residents in the city are well vaccinated, but safe protection seems to last only that long. The disease is always imported.

Some Medicolegal Questions.—Ebermayer reviews the laws and bills regarding the care of the insane, and other medicolegal questions. He mentions the prison sentence of a year imposed on a Christian scientist who consented to treat a boy with an impalement wound of the abdominal wall.

Medicine in the Netherlands East Indies.—Engel attributes the rarity of cancer and of hypertrophy of the prostate in India to the regular hypoplastic or thymicolymphatic constitution. An ulcer of the stomach, and goiter, are rarities. Appendicitis is uncommon, in spite of oxyuriasis.

Klinische Wochenschrift, Berlin

4: 97-144 (Jan. 15) 1925

*Synthetic Theory of the Body. M. Heidenhain.—p. 97.
*Dystopia of the Liver. M. Bürger.—p. 102.
Heart Beat and Minute Volume. B. Kisch.—p. 107.
*Guaiac Test in Occult Bleeding. I. Boas.—p. 109.
*Teeth in Congenital Syphilis. E. Langer and M. Wassmund.—p. 110.
*Convulsions in Whooping Cough. K. Neubürger.—p. 113.
*Anginoid Attacks. G. D. Aronowitsch.—p. 117.
"Vaccination Against Tuberculosis." F. Klopstock.—p. 118.
*Glucose in Intoxications. H. Pfeiffer and F. Standenath.—p. 119.
*Lactic Acid in Gastric Cancer. B. Mendel and W. Engel.—p. 119.
*The Eye in Encephalitis. A. Bielschowsky.—p. 120.
T-A in Munich. R. Degkwitz.—p. 124.
Prima Vista Diagnoses. A. Pick.—p. 126.
The Netherlands Council on Pharmacy and Chemistry. Bijlsma.—p. 140.

Synthetic Theory of the Body.—Heidenhain endeavors to complete the analytic cellular theory by a synthetic view. The cells are not the only units. Higher and lower systems may also divide and function. He believes that there is a law of constant proportions in growth. Jacobj measured the size of nuclei in the liver, and observed several maxima of frequency. The size of the nuclei at these points is in rational proportions. He believes that an equal volume of protoplasm contains an equal volume of protomers—the smallest living particles capable of division.

Dystopia of the Liver.—Bürger observed three cases of interposition of a bowel between the diaphragm and the right lobe of the liver. Diminished size of the lobe (by fasting), and changes from traction by pathologically altered stomach or ligaments are the causes.

Guaiac Test in Occult Bleeding.—Boas points out that the guaiac test is unsuitable only in the original Weber technic (extraction with acetic acid and ether). Better extractions give results identical with those of the benzidin test. Spectroscopy is a good control. In positive cases, the eventual presence of muscle fibers or ova should be noted.

Teeth in Congenital Syphilis.—Langer and Wassmund conclude from their observations that the cause of Hutchinson's teeth is in a syphilitic affection of the intermaxillary bone and the junction of the jaws. This accounts best for their localization near the middle line.

Convulsions in Whooping Cough.—Neubürger finds that the eclamptic attacks in whooping cough are probably due to small air emboli in the brain from disrupted pulmonary capillaries.

Anginoid Attacks.—Aronowitsch observed a young man with severe pains in the left upper extremity due to an amputation neuroma. Postoperative complications (hematoma) produced new pains which radiated to the heart region. The situation was the reverse of the usual radiation of pain in angina pectoris from the heart to the left upper extremity.

Glucose in Intoxication by Protein Cleavage.—Pfeiffer and Standenath prolonged by glucose injections the life of animals which had been nephrectomized, burned or injected with trypsin. The treatment was ineffective in animals with fatty infiltration of the liver.

Lactic Acid in Gastric Cancer.—Mendel and Engel separated the solid parts of the contents of carcinomatous stomachs from the filtrate, which was free from germs. The filtrate produced lactic acid from glucose, while the solid parts (including the Boas-Oppler bacilli) were inactive. They conclude that a ferment originating from the cancer itself produces the lactic acid.

The Eye in Encephalitis.—No other disease—according to Bielschowsky—presents such a variety and instability of ocular symptoms as epidemic encephalitis. Paralysis of accommodation, Argyll Robertson pupils, diplopia, and frequent paralysis of the vertical movements without diplopia, are found. Sensory optic disturbances are rare.

Medizinische Klinik, Berlin

21: 77-114 (Jan. 18) 1925

Clinical Psychiatry. P. Schilder.—p. 77.
Protein Treatment and Tuberculosis. J. Sorgo.—p. 80. Cont'n.
*Utilization of Tissue Immunity. M. Katzenstein.—p. 83.
Symposium on Early Operation for Gallstones. Oehlecker.—p. 86. Cont'n.
*Adiposogenital Dystrophy. W. Raab.—p. 87. Idem. Kraus.—p. 91.
Hematocele from Luteal Hemorrhage. O. Walther.—p. 92.
Benzene Poisoning. Ziel.—p. 93.
Treatment of Angina Pectoris. L. Stein.—p. 95.
*Treatment of Oxyuriasis. F. H. Lorentz.—p. 95.
Hematology in Gynecologic Diagnosis. P. Schumacher.—p. 96.
Psychodiagnosis and Psychotherapy. H. Fendel.—p. 99. Cont'n.
Survey on Psychanalysis. W. Stekel.—p. 100. Conc'n.
Survey on Pathology. S. Gräff.—p. 102.

Utilization of Tissue Immunity.—Katzenstein exposes skin grafts to the action of the germs of the diseased focus. The resulting inflammatory process in the flap heals in about five days, and the flap may then be transplanted without danger of demarcation. He attributes the success of two-stage operations to this mechanism. Bone transplants in infected processes should be taken from the neighborhood of the focus, because they are probably locally immunized. He believes that osteomyelitis in children is an advantage. The sepsis otherwise would be more severe. He used therapeutically transplants of bone marrow from children in septicemias of adults—in some cases with success.

Adiposogenital Dystrophy.—Raab publishes among others the history of a patient with adiposogenital dystrophy with a lesion apparently localized only in the posterior lobe of the pituitary. Kraus does not accept a causal connection.

Treatment of Oxyuriasis.—Lorentz believes that oxyuris develops from ova only in the anal ring. He had perfect results from the advice to wash the anal region well after every stool.

Münchener medizinische Wochenschrift, Munich

72: 81-118 (Jan. 16) 1925

Miscellaneous Remarks. E. Opitz.—p. 81.
Shock Treatment. E. Lederer.—p. 83.
*Lactic Acid in the Blood. F. Valentin.—p. 86.
*Specific Treatment of Tuberculosis. W. G. Ruppel.—p. 90.
Auscultation of the Heart. J. Schwarzmann.—p. 93.
Psychology and Medicine. E. Stern.—p. 94.
*Theory of Hysteria. Engelen.—p. 95.
Gallbladder Disease in Children. S. Gehwolf.—p. 99.
"Iron Reaction in the Brain." C. Peter.—p. 99.
"Tuberculin by the Mouth." M. Klotz.—p. 100.
*The Menarche and Cancer. F. Lickint.—p. 100.
Extent of Amputations, and After-Care. K. Grasmann.—p. 101.
The History of Cellular Pathology. G. Honigmann.—p. 102.

Lactic Acid in the Blood.—Valentin determined the lactic acid concentration of the blood in various conditions. Insulin does not increase it. This does not speak—in his opinion—for an increased cleavage of glycogen. It might indicate accelerated synthesis of glycogen or lactacidogen.

Specific Treatment of Tuberculosis.—Ruppel is experimenting with the pseudoglobulin fraction of the serum of cattle immunized with tubercle bacilli. The preparations are injected in guinea-pigs and the next day the phagocytic action of the peritoneal fluid is tested. He also uses the same fraction of exudates from tuberculous patients. The lyophobe fraction of tubercle bacilli has, in his opinion, certain advantages for active immunization.

Theory of Hysteria.—Engelen believes in Sahli's theory of hysteria as caused by functional lesions of anatomically distinct parts of the brain. This explains the fact that hysterical patients produced symptoms resembling epidemic encephalitis long before the latter disease was known to neurologists.

The Menarche and Cancer.—Lickint found, before Mayer, that comparatively many women with cancer had had a delayed beginning of menstruation. The menarche occurred in seven of his cancer patients between the twelfth and fifteenth years and in twenty-five between the sixteenth and twentieth years.

Zentralblatt für innere Medizin, Leipzig

46: 49-72 (Jan. 17) 1925

Hemoglobin Determination. O. Müller.—p. 50.

46: 73-88 (Jan. 24) 1925

*Indicators for Gastric Acidity. A. Pfefferkorn.—p. 73.

Indicators for Gastric Acidity.—Pfefferkorn believes that a crude estimation of the free and total acidity of the stomach contents with Congo and litmus paper is sufficient for the practitioner.

Casopis lekaruv ceskych, Prague

64: 41-80 (Jan. 10) 1925

Antisera Used in Czechoslovakia. B. Feierabend.—p. 41. Cont'n, p. 90.
Medicolegal Aspects of Suffusions. F. Hájek.—p. 49.
*Foreign Bodies in Trachea or Bronchus. B. Wiskovský.—p. 56. Conc'n.
*Duodenal Pseudodiverticula. J. Divis.—p. 61. Conc'n.
*Yellow Atrophy of the Liver. S. Basar.—p. 65.
Social Indications for Abortion. F. Procházka.—p. 66.

Foreign Bodies in Trachea or Bronchus.—Wiskovský concludes his study on foreign bodies aspirated into the trachea and bronchi. The latency stage between the initial suffocative attack and pulmonary symptoms is the most important source of dangerous diagnostic failures. Roentgen plates are convincing only if they show the foreign body. Direct bronchoscopy is the therapeutic—and sometimes diagnostic—method of choice. General anesthesia is rarely necessary. A reflex pseudobronchitis resembling asthma was observed in two patients and disappeared after removal of the foreign body.

Duodenal Pseudodiverticula.—Divis describes three cases of a secondary diverticulum of the duodenum, situated near the ulcer and caused by the inflammatory changes around the latter. The duration of the ulcer was long in all the cases.

Yellow Atrophy of the Liver.—Basar confirms the possibility of a good Maillard's urogenic coefficient in acute yellow atrophy of the liver.

64: 81-120 (Jan. 17) 1925

*Pseudotabes. Pelnár.—p. 81.
*Formation and Disappearance of Agglutinins. M. Kredba.—p. 83.
*Paralysis Agitans and Wilson's Disease. K. Teige.—p. 89.
*Cortical Hemianesthesia. O. Janota.—p. 95. Begun, p. 45.
*Prevention of Measles. J. Procházka.—p. 100.
*Urochromogen Reaction in Surgical Tuberculosis. J. Jung.—p. 103.
Calculosis of Vaginal Hydrocele. Horálek.—p. 108.

Pseudotabes.—Pelnár demonstrates the symptoms of neuritic pseudotabes in cases of alcoholic, postdiphtheria, diabetic and arsenical origin. The prognosis is good except when the central nervous system becomes involved.

Formation and Disappearance of Agglutinins.—Kredba finds a close parallel between the curve of increase and decrease of agglutinins and of hemolysins in rabbits.

Paralysis Agitans and Wilson's Disease.—Teige believes that the pathogenesis of paralysis agitans may be found in a dysfunction of the parathyroids, causing an overproduction of guanidin. In the progressive lenticular degeneration, the overproduction of guanidin might be due to an increase of ammonia which inhibits deamidization. The primary cause of the ammoniemia might be the affection of the liver.

Cortical Hemianesthesia.—Janota reports the history of an elderly man with hemianesthesia affecting especially the sensations of pain and of heat. There was a transitory astereognosis and agenesia. Motor symptoms were slight. He localizes the lesion in the left posterior central convolution.

Prevention of Measles.—Procházka injected measles convalescents' serum, in doses of 2.5 c.c., in ninety children exposed to measles. Only five of them contracted a light affection. Three of these had received the same serum from a mild case, and two became ill on the thirty-third day after the injection.

Urochromogen Reaction in Surgical Tuberculosis.—Jung confirms the grave prognostic significance of a repeatedly positive Weiss' urochromogen reaction in surgical tuberculosis. Sudden disappearance of the reaction may be a sign of insufficiency of the kidneys.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

2: 3107-3242 (Dec. 20) 1924

The Editorial Management of the Tijdschrift. G. van Rijnberk.—p. 3108.
Postoperative Suppression of Urine. F. C. van Tongeren.—p. 3112.
Mosquitoes at Amsterdam. N. H. Swellengrebel.—p. 3120.
*Oxidation of Benzyl Compounds in Organism. Snapper et al.—p. 3125.
Bilateral Hemianopsia and Aphasia After Operation. Wijsenbeek.—p. 3134.
Spontaneous Delivery of Hydrocephalous Child. Van den Berg.—p. 3137.

*Cerebellar Function. G. van Rijnberk.—p. 3138. Conc'n, 1: p. 377.
Medical Impressions of New York Hospitals. D. Schoute.—p. 3187.

Rapid Oxidation of Benzyl Derivatives in the Organism.—Snapper, Grünbaum and Sturkop report the results of research on healthy subjects on a strict milk and thick gruel diet, thus having little hippuric acid to excrete, and given test amounts of benzyl alcohol and benzyl esters. The oxidation to benzoic acid occurred very rapidly. Fully 80 or 90 per cent. of the amount of hippuric acid to be theoretically expected appeared in the urine—as much and as soon as would appear after taking an equivalent amount of sodium benzoate by ingestion. Consequently, it is futile to rely upon any therapeutic action on spastic conditions from the benzyl compounds by the mouth, as they are transformed too rapidly into inactive compounds.

Physiology of the Cerebellum.—Van Rijnberk summarizes with illustrations and comments on the literature of the last decade on localization of function in the cerebellum, especially by animal experimentation.

1: 1-116 (Jan. 3) 1925

*Protopathic Sensibility of the Skin. Boeke and Heringa.—p. 4.
*Fracture of the Patella. E. Hustinx.—p. 13.
*Incubator Treatment of Leg Ulcer. G. A. M. van Balen.—p. 20.
Perforation of the Stomach. Ten Cases. P. H. van Roojen.—p. 22.
Fractured Skull with Paradoxic Pupil Reaction. Struijcken.—p. 24.
Syphilitic Gummas at Points of Contusion. M. Nijkerk.—p. 26.
Hippocrates in Art. C. H. de Groot.—p. 30.
Mozart and His Physicians. J. Koopman.—p. 35.
A Harelip Operation in 1808. J. van der Hoeven.—p. 44.

Protopathic Sensibility of the Skin.—Boeke and Heringa report findings which conflict with Head's theory of protopathic sensibility. Their research was conducted on Heringa's hand which had been paralyzed after a fall in which the ulnar nerve had been severed by a broken pane of glass. The nerve was sutured an hour later, and the sensibility and histologic findings in an excised scrap of skin were studied during the following months as regeneration of nerve function proceeded.

Fracture of the Patella.—Hustinx cuts the gordian knot of treatment of a fractured patella by simply discarding the smaller fragment and trusting to Nature to replace the missing portion. In the three cases in which this treatment was applied, the knee function was restored to apparently normal in three and a half months, two months and ten days and six weeks after the accident. The results, he says, "surpassed all expectations. *Simplex sigillum veri.*"

Heat in Treatment of Leg Ulcer.—As a last resort in a case of leg ulcer of three years' standing, in a woman of 62, bedridden from the cachexia and threatened gangrene of the foot, van Balen applied a hot air box to the leg, for three to six hours a day (39 C.). The relief of pain was prompt and in twelve weeks healing was complete. In the majority of his other cases, the cure was complete in three weeks. The leg is exposed bare in the oven, and outside only a protecting bandage is worn.

1: 117-216 (Jan. 10) 1925

Tuberculosis of the Patella. A. G. J. Hermans.—p. 118.
Hysteria Versus Dementia Praecox? J. M. Rombouts.—p. 131.
The Malaria Research of the Health Board of the League of Nations. Swellengrebel.—p. 139. Cont'd.
Normal Pregnancy Between a Mole and a Chorio-Epithelioma. Hermanides.—p. 152.
Case of Infectious Conjunctivitis. J. Krull.—p. 158.

Acta Chirurgica Scandinavica, Stockholm

57: 487-565 (Dec. 31) 1924

Proceedings of Northern Orthopedic Congress, 1922. S. Johansson.—p. 487.
*Fractures of Neck of Femur. O. Löfberg.—p. 504.
Perforated Gastric Ulcer with Subphrenic Abscess. Nordentoft.—p. 535.
*Laminectomy for Tumor of Spinal Cord. J. Nordentoft.—p. 537.
*Case of Embolectomy. W. Gejrot.—p. 542.
Complicated Fracture of Larynx. B. Fernström.—p. 546.

Treatment of Fractures of Neck of Femur.—Löfberg reviews 306 cases (from 1909 to 1922), of which 212 were treated with plaster bandages after reduction in inward rotation and abduction. A firm bony union resulted in 67 per cent. of the medial fractures, and in all cases of lateral fracture. He considers a fixation period of eight weeks as generally sufficient. After removal of the plaster, the patient should remain in bed until able to lift the leg easily with the knee extended. Only active movements should be allowed. Ten roentgenograms and a tabulation of the clinical histories of the 212 cases are included. The article appears in English.

Laminectomy for Tumor of Spinal Cord.—Nordentoft reports two cases. In the first, in a woman, aged 34, removal of an intraspinal tumor resulted in complete recovery. In the second case, in a woman, aged 55 years, no tumor was found—the spinal cord seemed merely narrow and reddish—but notable improvement in the patient's condition followed the laminectomy.

Case of Embolectomy.—Gejrot describes his case in a woman, aged 70, with pronounced arteriosclerosis and hypertension. The embolus in the axillary artery, just below the origin of the circumflex artery, was removed one and three-quarters hours after its formation, with complete restoration of the circulation in the arm. Necropsy, following the patient's death eight days later from the primary affection, showed perfect healing of the arteriotomy wound.

Finska Läkaresällskapets Handlingar, Helsingfors

68: 849-939 (Dec.) 1924

*Etiology of Renal Hemorrhage. H. Elving.—p. 849.
*Lipoids in Suprarenal Cortex. H. Roos.—p. 863.
*Pirquet Tests in Children. H. Söderström.—p. 879.
Statistics on Gallstone Cases. H. Bardy.—p. 891.
*Early Symptom in Exophthalmic Goiter. E. Enroth.—p. 895.

Etiology of Renal Hemorrhages.—Elving discusses bleeding in the kidneys not due to calculi, tuberculosis or tumors. He describes four cases in patients, aged from 32 to 68, all with recovery. In the first three cases, with puzzling diagnosis, excision of the diseased kidney showed granular pyelitis, arteriosclerotic hematuria, or hemorrhage from pressure of a microscopic cyst on sclerotic vessels. In the fourth case, an infarct in the right lung after operative drainage of a periappendicular abscess was followed by severe renal hemorrhages, caused by an infarct in the kidney, probably from an embolus. He recommends extirpation of the diseased organ when the second kidney is competent. In the case of granular pyelitis, decapsulation with local treatment might have arrested the hemorrhage.

Lipoids in Cortical Substance of Suprarenals in Health.—Roos examined conditions in regard to the lipoids in ten cases of sudden death from gunshot wounds and in two cases of suicide by hanging, all in young or middle-aged men. The different cases presented a conformity in the main distribution of the lipoids. The cause of the marked variation in lipoid content in the different cases was not found.

Skin Tuberculin Tests in Children.—The Pirquet test elicited a positive reaction in 37.2 per cent. of 1,476 children in the children's ward (Helsingfors), in eleven age groups. In the second group, aged ½ to 1, the reaction occurred in 23 per cent.; in the last group, aged 9 to 10, in 63.6 per cent. Söderström states that Pipping and Routsalainen obtained similar results. The 238 sick children free from all signs of tuberculosis, aged up to 10, gave an average positive reaction in 21 per cent. of the cases. One chart tabulates the cases in groups according to disease, and the percentage of positive Pirquet reactions for each division is indicated.

Early Symptom in Exophthalmic Goiter.—Enroth calls attention to the importance of the edema of the upper eyelids which he noted in four cases as one of the earliest manifestations of toxic hyperthyroidism.

Ugeskrift for Læger, Copenhagen

86: 1033-1066 (Dec. 25) 1924

*Sanocrysin Treatment of Tuberculosis. H. Møllgaard.—p. 1035.
Experimental Gynandromorphism in Fowls. Pézard et al.—p. 1070.

Experimental Foundation for Sanocrysin Treatment of Tuberculosis.—Møllgaard presents what he designates as the most important points in his experimental evidence of the value of sanocrysin. The article occupies thirty-four pages and includes charts, numerous photomicrograms and colored plates.